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RESULTS OF A NATIONAL PUBLIC OPINION SURVEY

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AUTOMOBILE MISFUELING STUDY

RESULTS OF A NATIONAL PUBLIC OPINION SURVEY

BY

Optima Applied Social Research Inc.

FOR

Environmental Protection Service
Environment Canada

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IP-56
April 1986

Rapport final

ÉTUDE SUR L'UTILISATION PAR LES AUTOMOBILISTES D'ESSENCE CONTRE-INDIQUÉE

Préparée pour:
Le Service de la protection de l'environnement
Environnement Canada

(contrat du MAS n° 52SS.KE145-5-0184)

N° 266

Le 28 janvier 1986

1. CONTEXTE DE L'ÉTUDE ET MÉTHODES EMPLOYÉES

1. CONTEXTE DE L'ÉTUDE ET MÉTHODES EMPLOYÉES

1.1 Introduction

Un nombre croissant de voitures de promenade sont conçues pour fonctionner à l'essence sans plomb plutôt qu'à l'essence au plomb. Étant donné que les émissions des véhicules alimentés à l'essence au plomb contribuent pour beaucoup à la pollution par le plomb, l'utilisation par certains automobilistes de l'essence au plomb au lieu d'une essence sans plomb inquiète Environnement Canada, car cette façon d'agir rend inefficace le dispositif antipollution installé dans les automobiles.

En juillet 1985, la Direction des programmes industriels d'Environnement Canada a demandé à la firme Optima d'effectuer une étude d'observation pour déterminer l'incidence réelle de l'utilisation d'essence contre-indiquée au Canada, c'est-à-dire le nombre d'automobilistes observés qui emploient de l'essence au plomb dans le cas des voitures de promenade conçues pour fonctionner à l'essence sans plomb.

En 1978, trois ans après l'introduction au Canada de convertisseurs catalytiques qui nécessitent l'utilisation exclusive d'essence sans plomb, le Service de la protection de l'environnement (SPE) d'Environnement Canada avait commandé une étude sur l'utilisation d'essence contre-indiquée*, fondée sur des observations enregistrées dans certains centres urbains à des stations-service constituant un échantillon représentatif. Comme la majorité des nouvelles automobiles vendues au Canada sont maintenant munies d'un convertisseur, le SPE a voulu réaliser une nouvelle enquête sur l'utilisation d'essence contre-indiquée pour mieux comprendre la façon d'agir des automobilistes et des stations-service.

L'étude de 1985 avait pour but:

- de déterminer dans quelle mesure les automobilistes employaient de l'essence contre-indiquée;

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* "Vehicle Fueling Survey", N.D. Lea Associates Ltd., Ottawa, 1978.

- de déterminer quelle était la façon la plus courante d'alimenter les véhicules en essence contre-indiquée (substitution des robinets de distribution, agrandisse-ment de l'orifice d'entrée, remplissage lent, installation d'un adaptateur sur le robinet ou utilisation d'un entonnoir);

- d'observer tout facteur ayant un effet sur l'utilisation d'essence contre-indiquée, comme le lieu géographique, la plaque indicatrice du véhicule (y compris la catégorie), le type de station-service (libre-service ou avec service), l'emplacement de la station-service (en milieu urbain ou rural), etc.;

- de vérifier, en ce qui concerne l'utilisation d'essence contre-indiquée, toute tendance fondée sur les résultats de l'étude précédente;

- de trouver les raisons qui incitent les gens à utiliser de l'essence contre-indiquée (p. ex., le prix, la qualité, la disponibilité, le rendement du véhicule, etc.).

En 1984, la firme Optima a mené une enquête auprès de 2000 Canadiens adultes constituant un échantillon représentatif. Un sous-ensemble de questions s'adressait aux conducteurs de véhicule, à qui l'on demandait quel type d'essence ils utilisaient. Quatre adultes sur cinq (79%) ont déclaré conduire un véhicule au moins une fois la semaine. De ce nombre, sept sur dix (70%) ont dit que leur véhicule était conçu pour fonctionner à l'essence sans plomb, et 26%, à l'essence au plomb*. D'après cette enquête, 13% des conducteurs de véhicules conçus pour fonctionner à l'essence sans plomb ont déclaré utiliser de l'essence au plomb.

Les principales constatations de l'étude commandée font l'objet du présent rapport et, au besoin, elles ont été comparées aux résultats du sondage de 1984 et de l'étude effectuée en 1978.

Nous tenons à remercier les fonctionnaires d'Environnement Canada, qui se sont montrés très coopératifs. Ils nous ont aidé à affiner nos méthodes pour les adapter

---

* "Attitudes towards Air Pollution and Stricter Vehicle Emission Standards", Optima Consultants, Ottawa, 1984.

aux objectifs de l'étude; leurs observations et leurs suggestions, ainsi que celles d'autres parties intéressées, ont été utiles dans la préparation de notre rapport. Nous remercions aussi l'INCI de Montréal, qui a recueilli des données d'excellente qualité et les a ensuite traitées, ainsi que les quelque 500 gérants de stations-service sans la collaboration desquels l'étude n'aurait pas été possible.

1.2 Méthodes employées

Nous désirons souligner que les équipes chargées de la collecte des données pour l'industrie canadienne de l'étude des marchés obtiennent de bons résultats lorsqu'il s'agit d'observer et d'enregistrer avec exactitude des paramètres concernant les véhicules comme la marque et le nom du modèle, mais elles ne peuvent pas "enregistrer" avec précision l'année du modèle, le nom du fabricant, la catégorie du véhicule, son origine ou le type de carburant indiqué. (Nous croyons que même une équipe de mécaniciens d'auto, agissant comme interviewers et payés plus cher, ne fournirait pas des renseignements exacts sur l'année du modèle.) En outre, l'étiquette indiquant le carburant à utiliser n'est pas toujours apposée sur l'extérieur des véhicules. En conséquence, nous avons recommandé que l'équipe chargée de la collecte des données enregistre la marque du véhicule et le nom du modèle et laisse à notre équipe de codage le soin d'utiliser cette information pour trouver le nom du fabricant, l'origine et la catégorie du véhicule ainsi que le type de carburant à utiliser, grâce aux documents officiels fournis par Environnement Canada. Ce dernier a accepté toutes ces recommendations.

Selon les clauses de notre contrat, la collecte de données devait se faire dans dix villes: Vancouver, Calgary, Regina, Winnipeg, Toronto, Sudbury, Ottawa, Montréal, Trois-Rivières et Halifax. Sept d'entre elles avaient servi de lieu d'enquête dans l'étude de 1978, mais comme cette dernière avait révélé que le taux d'utilisation d'essence contre-indiquée semblait élevé dans les localités de l'Ouest, il a été décidé que l'étude de 1985 serait étendue à la ville de Winnipeg. Sudbury et Trois-Rivières ont été ajoutées à la liste pour obtenir des données sur les petites villes.

L'étude de 1985 a consisté dans une enquête à deux phases fondée sur un échantillon aléatoire stratifié de quelque 500 stations-service et d'environ 4 300 véhicules observés dans dix centres urbains choisis. Dans la première phase, il s'agissait d'observer les cas de substitution des robinets de distribution de l'essence au plomb et de recueillir d'autres renseignements dans 50 stations-service exploitées dans chacun des dix centres urbains et constituant un échantillon représentatif. La seconde phase a consisté à observer dans les dix centres environ 430 véhicules, pris au hasard, dont les conducteurs s'approvisionnaient en carburant. On trouvera dans l'annexe 6.1 une copie de la lettre demandant aux gérants des stations-service la

permission d'y placer des interviewers ainsi qu'une copie du formulaire d'observation utilisé pour l'étude. L'annexe 6.2 contient les rapports locaux sur la collecte de données dans environ 510 stations-service et sur l'observation de 4 300 véhicules.

Les formulaires de collecte de données ont été préparés, traduits, préalablement vérifiés et imprimés, puis envoyés aux superviseurs régionaux. Des séances d'information ont été tenues en vue de passer minutieusement en revue, avec les interviewers et les observateurs, les formulaires, les méthodes d'échantillonnage ainsi que les instructions écrites se rapportant à l'observation des stations-service et des véhicules. Les superviseurs régionaux ont visité les stations-service pour évaluer le travail accompli.

Une fois les observations terminées, les superviseurs ont étudié tous les formulaires qui avaient été remplis et mis en forme les données avant de les transmettre au bureau central pour y être traitées.

Toutes les données ont à nouveau été mises en forme pour faciliter leur entrée. Puis, des codeurs professionels ont étudié les marques (p. ex., Chevrolet) et les modèles (p. ex., Celebrity) enregistrés pour les 4 311 véhicules observés afin de coder les formulaires pour y indiquer les renseignements suivants:

- Nom du fabricant;
- Catégorie du véhicule;
- Origine (véhicule fabriqué au pays ou importé)
- Type de carburant indiqué pour le véhicule.

On trouvera à l'annexe 6.3 les paramètres ayant servi au traitement des données, y compris la liste des véhicules qui, selon le fabricant, sont conçus pour fonctionner à l'essence au plomb.

Après les opérations de codage qui viennent d'être décrites, les données ont été entrées sur disque, et un contrôle complet a été effectué. Les pourcentages ont été pondérés en fonction de la population de chaque centre. Le rapport indique la taille

absolue de l'échantillon, c'est-à-dire le nombre de stations-service ou de véhicules observés, ainsi que le pourcentages, pondérés en fonction de la population des villes.

À noter que, dans les tableaux du rapport, les totaux peuvent varier entre 98% et 102% parce que les chiffres ont été arrondis. En outre, en ce qui concerne les quelque 500 stations-service des dix centres urbains où l'enquête a été menée, les résultats sont exacts $\pm$4,5% dans 19 cas sur dix compte tenu du fait que toutes les stations-service n'ont pas été incluses dans l'échantillon. Pour les 4 300 véhicules observés, la marge d'erreur calculée est de $\pm$1,5% dans les mêmes conditions. Cette marge est un peu plus élevée pour chacun des sous-groupes de l'échantillon et varie en fonction du nombre de stations-service ou de véhicules observés dans chaque sous-groupe. Le tableau suivant peut servir à déterminer, dans 19 cas sur 20, la marge d'erreur approximative pour les sous-groupes de l'échantillon.

Taille absolue de l'échantillon*	Marge d'erreur calculée
50	±14%
100	10
150	8
200	7
300	5.5
500	4.5
750	3.5
1 000	3
2 000	2
4 000	1.5

* Nombre absolu de stations-service ou de véhicules observés.

2. RÉSUMÉ

2. RÉSUMÉ

2.1 Point saillants

Voici les principaux points saillants de l'étude d'observation menée dans dix centres urbains du Canada et portant sur l'utilisation d'essence contre-indiquée.

Stations-service

- Dans les 510 stations-service choisies au hasard, 97% des gérants ont accepté de collaborer à l'étude.

- Toutes les stations offraient de l'essence au plomb, et presque toutes (99%), de l'essence sans plomb. À Trois-Rivières, 6% des stations n'offraient pas d'essence sans plomb, et il en était de même pour 2% des stations de Sudbury.

- Dans 7% des stations, nous avons observé qu'au moins un des robinets de distribution d'essence au plomb avait été changé, c'est-à-dire qu'il avait été remplacé par un robinet de diamètre plus petit, ce qui facilitait l'utilisation d'essence contre-indiquée.

- C'est à Régina que le plus grand nombre de cas de substitution de robinets a été relevé (39%), et c'est aussi dans cette ville que les gérants de stations-service ont le moins collaboré. Venaient ensuite, par ordre décroissant: Winnipeg, Toronto et Montréal: 8%, Ottawa, 4%, et Vancouver, ainsi que Sudbury et Halifax, 2%. À Calgary et à Trois-Rivières, aucun cas de substitution n'a été observé.

Véhicules

- Nous avons observé 4 311 véhicules, comprenant des voitures de promenade et des camions légers, dont les conducteurs s'alimentaient en carburant.

- Presque trois automobilistes sur quatre (73%) prenaient de l'essence sans plomb, et 27% (un sur quatre), de l'essence au plomb.

- Le taux d'utilisation de l'essence au plomb était le plus élevé à Winnipeg (48%), à Régina (47%) et à Calgary (40%), et le plus faible à Montréal (16%) et à Ottawa (22%). Pour les autres villes, les taux étaient les suivants: Vancouver, 36%; Trois-Rivières, 30%; Sudbury, 28%; Halifax, 26%, et Toronto, 25%. Entre Winnipeg et Montréal, la différence entre les taux d'utilisation de l'essence au plomb est donc de 32%.

- Compte tenu de la pondération de l'échantillon en fonction de la population des centres, 74% des véhicules étaient conçus pour fonctionner à l'essence sans plomb, et 26%, à l'essence au plomb. Le pourcentage de véhicules conçus pour fonctionner à l'essence au plomb variait entre 20% (Ottawa) et 43% (Winnipeg), ce qui constitue un écart de 23%.

- De l'échantillon de 3 128 véhicules conçus pour fonctionner à l'essence sans plomb, 474 ont été alimentés à l'essence au plomb, ce qui correspond, après pondération en fonction de la population, à un taux d'utilisation d'essence contre-indiquée égale à 12% pour l'ensemble des dix centres urbains.

- Voici quels sont les taux d'utilisation d'essence contre-indiquée constatés dans les dix centres urbains:

	%
Régina	35
Calgary	20
Trois-Rivières	18
Winnipeg	17
Vancouver	13
Toronto	12
Halifax	11
Ottawa	9
Montréal	9
Sudbury	8

- Le taux d'utilisation d'essence contre-indiquée était le plus faible (8%) dans les villes où la population était supérieure à un million d'habitants, comparativement à 10% (population de 500 000 à 800 000) et à 14% (population de 100 000 à 400 000).

- Les conducteurs de petits camions et de fourgonnettes semblaient être le plus enclins (29%) à utiliser de l'essence contre indiquée, comparativement aux conducteurs de véhicules d'autres catégories (de 5% à 15%).

- Le taux d'utilisation d'essence contre-indiquée semblait être le plus élevé dans les régions où aucun règlement provincial n'interdisait cette usage, mais il était également élevé (de 8% à 12%) même en Ontario et au Québec, où il existe un règlement à ce sujet.

- Le pourcentage d'automobilistes qui conduisaient des véhicules conçus pour fonctionner à l'essence au plomb était de 26%, mais 32% d'entre eux (trois sur dix) utilisaient en fait de l'essence sans plomb.

- La modification de l'orifice du réservoir d'essence semblait être le moyen le plus courant permettant l'utilisation d'essence contre-indiquée. Ce moyen était employé dans 91% des cas (environ neuf fois sur dix). Les autres possibilités consistaient à utiliser un robinet de distribution qui avait été changé (4%) ou à remplir lentement le réservoir (3%).

- Quant aux automobilistes (12%) qui utilisaient de l'essence contre-indiquée, 58% disaient qu'ils agissaient ainsi principalement parce qu'ils croyaient que leur véhicule était conçu pour fonctionner à l'essence au plomb, 32%, parce que l'essence au plomb coûtait moins cher, et de petites minorités, pour les deux raisons mentionnées ou pour d'autres motifs.

2.2 Conclusions

- À l'occasion du sondage d'opinion publique effectué en 1984 chez les automobilistes et commandé par Environnement Canada, 26% des conducteurs ont déclaré que leur véhicule était conçu pour fonctionner à l'essence au plomb. Un bon 26% de l'échantillon de véhicules au sujet duquel des observations ont été faites en milieu urbain comprenaient des automobiles conçues pour fonctionner à l'essence au plomb. Bien que le sondage de 1984 ait aussi été mené en milieu rural, les résultats montrent que les milieux urbain et rural ne présentent pas de différences significatives.

- Des automobilistes qui, lors de notre sondage de 1984, avaient déclaré conduire un véhicule conçu pour fonctionner à l'essence sans plomb, 13% avaient dit qu'ils utilisaient au moins quelquefois de l'essence au plomb. Les réponses des citadins et des habitants des régions rurales ne différaient pas tellement. Ce pourcentage est comparable au taux de 12% calculé pour l'utilisation d'essence contre-indiquée lors de l'étude d'observation de 1985, mais dans ce dernier cas, nous avons constaté que les automobilistes des petits centres urbains étaient plus enclins que ceux des grands centres à utiliser de l'essence contre-indiquée.

- Du point de vue de la population, nous concluons, par extrapolation, que le nombre d'automobilistes canadiens utilisant de l'essence contre-indiquée s'élève approximativement à 1 122 400. D'après notre sondage de 1984, des 16 millions d'adultes que compte le Canada, 79% environ (12 640 000) conduisent un véhicule, et dans 74% des cas (9 353 600), ce véhicule est conçu pour fonctionner à l'essence sans plomb; 12% des automobilistes (1 122 400) qui possèdent un véhicule de ce genre utilisent de l'essence contre-indiquée.

- Quant aux véhicules, nous concluons, par extrapolation, qu'environ 1 099 600 d'entre eux sont alimentés avec de l'essence contre-indiquée, ce qui correspond à 12% des véhicules conçus pour fonctionner à l'essence sans plomb (9 163 579). La proportion de ce groupe de véhicules par rapport au nombre

total de voitures de promenade (12 383 215, sans compter les autobus) est de 74%.

- Bien que la majorité des automobilistes qui utilisent de l'essence contre-indiquée prétendent, dans une proportion de 58%, que leur véhicule est conçu pour fonctionner à l'essence au plomb, presque tous les conducteurs de véhicule pour lesquels l'utilisation d'essence au plomb est indiquée (84%) affirment avec raison que leur véhicule est conçu pour fonctionner avec ce type d'essence. Pourquoi ce dernier groupe d'automobilistes serait-il si bien informé, et le premier, si peu? Nous croyons plutôt que les conducteurs qui utilisent de l'essence contre-indiquée agissent ainsi parce que l'essence sans plomb coûte presque 3¢ de plus le litre, et que se sentant coupables de contribuer peut-être à la pollution de l'environnement, ils soutiennent que leur véhicule est fait pour l'essence au plomb.

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consultants in **applied** social research inc

Final Report

AUTOMOBILE MISFUELING STUDY

Prepared for:
Environmental Protection Service
Environment Canada

(under DSS contract no. 52SS.KE145-5-0184)

no. 266

January 28, 1986

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January 29, 1986

Nick Ostrouchov
River Road Environmental
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Re: Motor Vehicle Fuel Switching Study (no. 266)

Dear Nick,

Enclosed please find our final report based on a survey regarding the incidence of using leaded gasoline in vehicles designed to run on unleaded. In this report, we contrast findings, where this is useful, with the results of other related studies.

We very much enjoyed discussing study findings and implications with you and your colleagues. Your comments and suggestions have been taken into account in this final version.

Kind regards,

Michael C. Saykaly
Senior Advisor
Research Design and Evaluation

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TABLE OF CONTENTS

Page

1. STUDY BACKGROUND AND PROCEDURES

1.1. Introduction 1

1.2 Methodology 4

2. EXECUTIVE SUMMARY

2.1 Highlights 8

2.2 Conclusions and Recommendations 12

3. PROFILE OF SERVICE STATIONS

3.1 Type of Service Stations 16

3.2 Incidence of Nozzle Substitution . . . 18

3.3 Incidence of Providing Leaded & Unleaded Fuel. 20

3.4 Service Stations Brand Name 22

4. DETAILED SUMMARY OF VEHICULAR OBSERVATIONS

4.1 Background Information on Vehicles . . . 25

4.2 Fuel Designation of Vehicles 29

4.3 Fuel Used in Vehicles 31

TABLE OF CONTENTS (continued)

Page

5. ANALYSIS OF MISFUELING

5.1 Incidence of Misfueling 34

5.2 Misfueling by Urban Centre 36

5.3 Trends in Misfueling 38

5.4 Regional Distribution of Misfuelers . . . 40

5.5 Misfueling as a Proportion of Total Vehicles. 42

5.6 Manner of Misfueling 44

5.7 Reason for Misfueling 46

6. APPENDICES

6.1 Data Collection Instruments
(Questionnaires, Interviewer Instructions and Letter of Introduction)

6.2 Data Collection Reports
(510 Service Stations and 4,311 Vehicular Observations)

6.3 Data Processing Instruments
(Leaded Gasoline Designated Vehicles, Origin of Vehicle, Size Class)

6.4 Detailed Computer Tables

- Sample of 497 Service Stations
- Sample of 4,311 Vehicular Observations
  - overall sample
  - misfuelers only

1. STUDY BACKGROUND AND PROCEDURES

1. STUDY BACKGROUND AND PROCEDURES

1.1 Introduction

An increasing proportion of passenger vehicles on the road are designed to use unleaded gasoline as compared to leaded. Given that a major source of lead pollution is derived from vehicular exhausts where leaded gasoline is used, Environment Canada is concerned that some motorists use leaded gasoline on vehicles designed to use unleaded. This misfueling incapacitates the anti-pollution system.

In July of 1985, the Industrial Programs Branch of Environment Canada engaged Optima Consultants to carry out an observation study to establish the actual incidence of misfueling in Canada; that is, the incidence of motorists observed to use leaded gasoline on passenger vehicles designed to use unleaded.

The Environmental Protection Service (EPS) of Environment Canada had conducted a misfueling study in 1978 based on observations at a representative sampling of service stations in selected urban centres* ; this occurred three years after the introduction in Canada of catalytic converters which require the exclusive use of unleaded gasoline. As the majority of new cars sold in Canada are now converter equipped, EPS sought to undertake a new survey of misfueling in order to update our understanding of the practise of motorists and service stations.

---

* N.D. Lea Associates Ltd., "Vehicle Fueling Survey", Ottawa, 1978.

The objectives of this study are as follows:

- assess the degree of misfueling;
- determine the prevalent manner in which misfueling takes place (nozzle substitution, inlet restrictor tampering, slow fill, nozzle adaptor or use of funnel);
- observe any parameters which affect the rate of fuel switching, such as geographical location, vehicle nameplate (including size class of vehicle), type of service station (full service versus self service), location of service station (urban versus rural), etc.;
- ascertain any trends in fuel switching based on the results of the previous study;
- determine the reasons why people misfuel (e.g., gasoline price, fuel quality, vehicle performance, fuel availability, etc.)

In 1984, Optima conducted a survey among a representative sample of 2,000 Canadian adults. In that study, we had included a sub-set of questions in which adults who drive vehicles were probed on their fueling preferences. Four out of five adults (79%) presently drive a vehicle at least once a week. Among these drivers, seven out of ten (70%) motorists say their vehicle is designed to use unleaded gasoline while 26% say their vehicle is designed for leaded*. Based on these survey findings, 13% of drivers of vehicles designed to use unleaded gasoline say that they fuel their vehicles with leaded.

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* "Attitudes towards Air Pollution and Stricter Vehicle Emission Standards", Optima Consultants, Ottawa, 1984.

This report presents the basic findings of this study. Where useful, study findings from this 1985 observation survey were to be compared with those from the 1984 public opinion survey and with a previous fuel use observation study conducted in 1978.

We are grateful to the officials of Environment Canada for their close cooperation in helping to fine tune study instruments in line with study objectives, and in providing valuable comments and suggestions from their officials and other interested parties regarding our draft report. We are also grateful to INCI of Montreal for high quality data collection and processing, and to the nearly 500 managers of service stations who cooperated in this study, thus making it possible.

1.2 Methodology

We wish to emphasize to the reader that the data collection teams of the market research industry in Canada have a successful track record in accurately observing and recording vehicular information such as brand name and model name. However, they cannot accurately 'record' model year, manufacturer, size class, origin, or fuel designation. (Hypothetically, we suspect that even a team of auto mechanics, acting as interviewers (at far higher cost), would not provide accurate model year information). Furthermore, fuel labelling of vehicles is not universally indicated externally on the vehicle. Consequently, we recommended that the data collection team record vehicle brand name and model name, thus leaving to our coding team the responsibility of using this information to establish manufacturer, origin, size class, and fuel designation of vehicle, based on official documentation provided by Environment Canada. All of these recommendations were accepted by Environment Canada.

Based on contract requirements, data collection was to take place in ten communities. These include: Vancouver, Calgary, Regina, Winnipeg, Toronto, Sudbury, Ottawa, Montreal, Trois-Rivières and Halifax. Seven of these centers had been included in the 1978 fuel use observation study. Based on the apparently high misfueling rate in the Western Communities in 1978, it was decided to add Winnipeg to the present observation study. In addition, Sudbury and Trois-Rivières were added to provide an indication of misfueling rates in smaller communities.

This 1985 fuel use observation study consists of a two stage survey based on a **stratified random sample** of approximately 500 service stations and about 4,300 vehicular observations in ten selected urban centres. The first stage involved observation of the incidence of nozzle substitution at leaded gasoline pumps, and other information, at a representative sample of approximately fifty service stations in each of the selected ten urban centres.

The second stage consisted of observations entailing a random selection of about 430 vehicles being fueled in each of these ten centres. Please consult Appendix 6.1 for a copy of the letter presented to managers of service stations requiring permission to place interviewers at the stations, and a copy of the observation form used in this study. Appendix 6.2 includes the field reports on data collection regarding approximately 510 service stations and 4,300 vehicular observations.

Data collection forms were prepared, translated, pre-tested, printed, then sent to regional supervisors. Briefing sessions were held in order to rigorously review with interviewer/observers the forms, the sampling procedures, and the written instructions pertaining to observations of service stations and vehicles. Regional supervisors visited service stations to review work in progress.

Following the observations, supervisors reviewed all completed forms, edited them, then returned them to head office for processing.

All completed questionnaire forms were further edited to facilitate data entry. Subsequently, professional coders reviewed the recorded brand name (e.g., Chevrolet) and model name (e.g., Celebrity) on each of 4,311 vehicular observations in order to code the forms to indicate the following:

- Manufacturer
- Size Class
- Origin (domestic or import)
- Fuel Designation of Vehicle.

Please consult Appendix 6.3 for the Data Processing Instruments. These include the lists of vehicles designated by the manufacturer to use leaded gasoline.

Following implementation of the above described coding operation, data were entered on computer disk, and a 100% edit check was conducted. Percentages were **weighted** in accordance with the population size of each centre. In this report, we show the **actual** sample size of the number of service stations or vehicles observed, and the **weighted** percentages in accordance with community size.

The reader will note that tables in this report add up from 98% to 102% due to rounding of decimals. Moreover, results for the profile of approximately 500 **service stations** are estimated to be accurate within a margin of error of $\pm$ 4.5% in 19 cases out of 20 for the ten urban centres involved, as compared to what would be obtained had we included all service stations in these centres. The error margin for the 4,300 **vehicular observations** is estimated at $\pm$ 1.5% under these same conditions. The margin of error for each sub-group in the sample is somewhat higher, depending on the actual number of observed service stations or the number of observed vehicles in each sub-group. The following table may be used to determine the approximate error margin for subgroups in the sample in 19 cases out of 20.

Actual Sample Size*	Estimated Margin of Error
50	± 14 %
100	10
150	8
200	7
300	5.5
500	4.5
750	3.5
1,000	3
2,000	2
4,000	1.5

* This refers to the unweighted, actual number of observed service stations or vehicles.

2. EXECUTIVE SUMMARY

2. EXECUTIVE SUMMARY

2.1 Highlights

The following points constitute the major highlights resulting from a fuel switching observation study conducted in ten urban centers across Canada.

Service Stations

- Fully 97% of managers at the 510 randomly selected service stations agreed to cooperate in this study.

- All observed stations offer customers leaded gasoline. Almost all (99%) also offer unleaded. 6% of stations in Trois-Rivières, and 2% of those in Sudbury do not offer unleaded.

- At 7% of service stations, we observed that at least one of their leaded gasoline pump nozzles had been switched. That is, a smaller sized nozzle was substituted on the leaded pump. This facilitates misfueling (e.g. use of leaded gasoline in vehicles designed to use unleaded).

- The incidence of nozzle substitution is highest in **Regina (39%)**. (The incidence of refusal to cooperate in this study was also highest among managers in Regina.) Winnipeg, Toronto and Montreal follow with an incidence of 8% nozzle substitution. Results for other centres are as follows: Ottawa: 4%, Vancouver, Sudbury and Halifax 2% each. There were no observed cases of nozzle substitution in Calgary and Trois-Rivières.

Vehicular Observations

- We conducted 4,311 vehicular observations entailing gasoline fueling of passenger vehicles and light duty trucks.

- Virtually three out of four (73%) motorists were observed to refuel with unleaded gasoline, whereas one out of four (27%) refueled with leaded.

- The incidence of using leaded gasoline is highest in Winnipeg (48%), Regina (47%) and Calgary (40%), and lowest in Montreal (16%) and Ottawa (22%). Elsewhere, it is as follows: Vancouver 36%; Trois-Rivières 30%; Sudbury 28%; Halifax 26% and Toronto 25%. Thus, there is a 32% spread between Winnipeg and Montreal in the incidence of using leaded gasoline.

- Based on our sample of vehicles weighted in accordance with community size, 74% are designed to use unleaded gasoline while 26% are designed for leaded. Among the ten urban centres, the incidence of leaded designated vehicles ranges from 20% in Ottawa to 43% in Winnipeg. This constitutes a 23% spread.

- Out of a sample of 3,128 vehicles designed to use unleaded gasoline, 474 vehicles were filled with leaded. After weighting data in accordance with community size, we establish that the rate of misfueling is 12% for these ten urban centres as a whole.

- Observed community **misfueling rates** in each of the ten centres is as follows:

	%
Regina	35
Calgary	20
Trois-Rivières	18
Winnipeg	17
Vancouver	13
Toronto	12
Halifax	11
Ottawa	9
Montreal	9
Sudbury	8

- Misfueling is lowest in communities with over one million inhabitants (8%) as compared to those with 500,000 to 800,000 residents (10%) or with 100,000 to 400,000 (14%).

- By size class, misfueling is most likely to take place among motorists of **small trucks and vans** (29%) as compared to other size classes (ranges from 5% to 15%).

- It would appear that misfueling tends to be highest in areas without **provincial regulations** prohibiting its practise. However, even in Ontario and Quebec communities, where it is prohibited, the incidence of misfueling appears to be high (ranges from 8% to 12%).

- Among the 26% of motorists who are driving vehicles designed to run on leaded gasoline, we find that three out of ten (32%) are in fact fueling with unleaded.

- The principal **method of misfueling** appears to be through modification of the **vehicle's receptacle.** Approximately nine out of ten cases of misfueling (91%) involve a tampered receptacle. The availability of a substituted nozzle at the lead pump accounts for 4% of misfueling while a slow filling of the tank makes up the remaining 3% of cases.

- Among the 12% who misfuel, 58% say that the **principal reason** for using leaded gasoline is their perception that their vehicle is designed to use leaded gasoline, 32% of misfuelers attribute their choice to the cheaper price of leaded, while small minorities cite other or a combination of the above reasons.

2.2 Conclusions

- In our 1984 public survey among motorists conducted for Environment Canada, 26% of motorists say that they drive a vehicle designed to use leaded gasoline. Fully 26% of our sample of urban vehicular observations include vehicles designed to use leaded gasoline. Although the 1984 public opinion survey included the rural stratum, results show that there were no significant differences between urban and rural areas.

- Among drivers in our 1984 public opinion survey who say they drive a vehicle designed to use unleaded gasoline, 13% said that they at least sometimes use leaded fuel. There were no significant differences in the responses between urban and rural residents. This 13% **reported** misfueling rate compares with the 12% **observed** misfueling rate in the present study. Although the reported misfueling rate did not differ significantly between rural and urban respondents in the 1984 public survey, we do note in the present study of vehicular **observations** that vehicles in the smaller urban centres tend to be more likely to be misfueled as compared to those in larger centres.

- In terms of population, we project that there are approximately 1,122,400 **misfuelers** across Canada. (Based on our 1984 public opinion survey, approximately 79% of 16,000,000 Canadian adults drive a vehicle (12,640,000), of whom 74% are driving a vehicle designed to use unleaded gasoline (9,353,600) of whom 12% are misfueling (1,122,400).

- Seen from the perspective of vehicles, we project that there are approximately **1,099,600 misfueled vehicles**. This is based on an estimated 74% of 12,383,215 passenger vehicles (excluding buses) which are designed to use unleaded fuel (9,163,579) of which **12%** are misfueled (1,099,600).

- Although the majority of misfuelers claim that their vehicles are designed to use leaded gasoline (58% of them say this), the vast majority of drivers of leaded designated vehicles (84%) **correctly** state that their vehicle is designed to use leaded. Why would the leaded group be so accurately informed while the unleaded group be so uninformed. We suspect that this difference is due less to misinformation on the part of misfuelers, and more to the price difference of nearly three cents per litre, and to a sense of guilt that they may be engaging in behaviour that contributes to environmental damage.

3. PROFILE OF SERVICE STATIONS

3. PROFILE OF SERVICE STATIONS

In this section, we present the results regarding a profile of service stations in the ten communities included in this study. Observations are based on a stratified random sample consisting of approximately fifty service stations in each community. Percentage results for the total 497 actual service stations in the sample are weighted in accordance with community size.

	Service Stations	
	Actual sample	Weighted %
Vancouver	50	13
Calgary	50	6
Regina	51	2
Winnipeg	50	6
Toronto	50	31
Sudbury	48	2
Ottawa	50	7
Montreal	50	29
Trois-Rivières	48	1
Halifax	50	3
	497	100

Observation : Type of Service Stations

Sample size	(497)
	%
Full service	52
Self service	44
Both	3
	47
	99

3.1 Type of Service Stations

Approximately one-half (52%) of service stations offer full service whereas the remaining half (47%) offer either self-serve only (44%) or a mix of self-serve and full service (3%).

As compared to the 1978 study, the proportion of full service stations has fallen. Most dramatically, it has fallen 28 percentage points in Ottawa.

Stations Offering Full Service

	1985 %	1978 %
Halifax	100	100
Trois-Rivières	65	N/A
Sudbury	62	N/A
Toronto	56	60
Vancouver	52	67
Calgary	52	58
Ottawa	48	76
Regina	45	57
Winnipeg	44	N/A
Montreal	44	61

Observation : Nozzle Substitution (on leaded gasoline pumps only)

Sample size	(497)
	%
Yes	7
No	93
	100

3.2 Incidence of Nozzle Substitution (Q.6)

Overall, approximately one out of fourteen service stations (7%) have tampered with the leaded gasoline pump nozzle by substituting a smaller one able to fit into the fuel receptacle of a vehicle designed to use unleaded gasoline. The incidence of nozzle substitution is especially high in Regina (39%) and nil in Calgary and Trois-Rivières. Nozzle substitution has fallen most dramatically in Halifax since 1978.

	% of Stations with Nozzle Substitution	
	1985	1978
Regina	39	30
Toronto	8	0
Montreal	8	4
Winnipeg	8	N/A
Ottawa	4	13
Vancouver	2	16
Sudbury	2	N/A
Halifax	2	57
Trois-Rivières	0	N/A
Calgary	0	15

Observation Q.5a : Service Stations Offering Leaded Gasoline

Sample size	(497) %
Yes	100
No	0
	100

Observation Q.5b: Service Stations Offering Unleaded Gasoline

Sample size	(497) %
Yes	100
No	*
	100

---

* Less than 1%. The incidence of **not** offering unleaded gasoline is 6% in Trois-Rivières and 2% in Sudbury.

3.3 Incidence of Providing Leaded & Unleaded Fuel Q.5

All 497 service stations offer leaded gasoline. Virtually all of them also offer unleaded gasoline. In two of the urban centres, a few stations do not offer unleaded fuel: Trois-Rivières 6%; Sudbury 2%.

Observation: Service Stations Brand Name

Sample size	(497) %
Shell	18
Esso	16
Texaco	16
Gulf	12
Petro-Canada	10
Sunoco	3
Canadian Tire	2
Ultramar	1
Other*	22
	100

* See page 22 for a breakout of these 22% independent service stations.

3.4 Service Stations Brand Name

The table on the opposite page indicates the breakdown of service stations which fell into our sample in the ten selected centres. Shell leads the list (18%) followed closely by Esso and Texaco (16% each). The smaller independent stations constitute one-fifth (22%) of the total. The principal independents include:

Distribution of 22% Independents

	Actual Number	%
Irving	25	5
Turbo	14	4
Chevron	11	3
Mohawk	11	3
Husky	8	2
Co-Op	8	2
Domo	6	1
Regent	5	1
Sunny's	5	1
	93	22

4. DETAILED SUMMARY OF VEHICULAR OBSERVATIONS

4. DETAILED SUMMARY OF VEHICULAR OBSERVATIONS

In this section, we present the results regarding a profile of vehicles based on observations in the ten communities included in this study. Results are based on a stratified sample of approximately 430 observations for each of the ten urban centres. Percentage results for the total 4,311 actual vehicular observations have been weighted in accordance with community size.

Total Vehicular Observations (4,311)

	Actual sample	Weighted %
Vancouver	433	13
Calgary	432	6
Regina	430	2
Winnipeg	432	6
Toronto	433	31
Sudbury	429	1
Ottawa	432	7
Montreal	430	29
Trois-Rivières	430	1
Halifax	430	3
	4,311	100

Manufacturers of Vehicles Observed

	Sample size (4,311)	
	%	
General Motors	42	
Ford	17	
Chrysler	15	75
American Motors	1	
Honda	5	
Toyota	5	
Datsun	3	15
Volkswagen	2	
Other	9	
	99	

4.1 Background Information on Vehicles

The tables in this section present some background information on the vehicles in circulation in the ten urban centres under study. Three out of four observed vehicles (76%) are produced in North America, and one half (51%) are comprised of small cars.

The statistical tables appended to this report provide detailed information on the vehicles in circulation. Although peripheral to our mandate, the Department may find such information useful.

Origin of Vehicles

Sample size	(4,311)
	%
Domestic	76
Import	24
	100

Size Classes of Vehicles*

	1985	1978
Sample size	(4,311)	(6,819)
	%	%
SMALL	51	44
- Sub-compact	29	21
- Compact	22	23
LARGE	38	48
- Mid-size	27	24
- Full size	11	24
TRUCK/VAN	8	8
Not classified	4	0
	101	100

* Based on the U.S. Environmental Protection Agency's definition.

Fuel Designation of Vehicles

Sample size	(4,311)
	%
Leaded	26
Unleaded	74
	100

4.2 Fuel Designation of Vehicles

Fuel designation is based on the fuel Consumption Guide of Transport Canada. Where fuel designation of a model changes from previous years, we opted to categorize it as a leaded vehicle, in consultation with Environment Canada.

Among vehicles observed at **gasoline** pumps in this study, almost three out of four (74%) are designed to use unleaded gasoline while one out of four (26%) are designed to use leaded.

Among the ten urban centres, the incidence of **unleaded** designated vehicles ranges from a low of 57% in Winnipeg to 80% in Ottawa. This constitutes a twenty-three percentage point spread.

Among manufacturers, the observed incidence of **unleaded** designated vehicles in our sample is as follows: GM 95%, Toyota 90% and Ford 89% each. At the other extreme lie: Volkswagen 16%, Chrysler 37%, AMC 40% and Datsun 56%.

Fuel Actually Used

Sample size	(4,311)
	%
Leaded	27
Unleaded	73
	100

4.3 Fuel Used in Vehicles

Based on observations in the ten communities under study, 27% of motorists who fuel their vehicles with gasoline do so with leaded gasoline while 73% use unleaded. The incidence of using leaded ranges from 48% in Winnipeg to 16% in Montreal, a thirty-two percentage point spread:

	% Using Leaded Gasoline
Winnipeg	48
Regina	47
Calgary	40
Vancouver	36
Trois-Rivières	30
Sudbury	28
Halifax	26
Toronto	25
Ottawa	22
Montreal	16

5. ANALYSIS OF MISFUELING

5. ANALYSIS OF MISFUELING

In this section, we present an analysis of misfueling. This analysis presents the incidence of misfueling based on the 4,311 vehicular observations, then focuses exclusively on the 474 actual cases where leaded gasoline is used in a vehicle designed to use unleaded. Percentages have been weighted in accordance with community size.

Type of Gasoline Used By Designation of Vehicle

	Unleaded Gasoline	Leaded Gasoline
Sample Size*	(3,128)	(1,169)
	%	%
Type of gasoline used:		
Leaded	12	68
Unleaded	88	32
	100	100

* In this case, the total of 3,128 unleaded vehicles plus 1,169 leaded vehicles add up to 4,297, which is 14 vehicles short of the total sample of 4,311. These 14 vehicles, which constitute less than 1%, were not classifiable as to vehicular fuel designation.

5.1 Incidence of Misfueling

Out of 4,311 vehicular observations at gasoline pumps in this study, we have previously shown that, on a weighted (representative) basis, 74% of vehicles (3,128 cases) are designed for unleaded gasoline while 26% (1,169 cases) are designed to use leaded. Based on these results, one out of eight (12%) motorists driving an unleaded designated vehicle are fueling with leaded gasoline. This constitutes the incidence rate for misfueling among these ten urban centres overall (12%).

Among the 27% of motorists observed using leaded gasoline in their vehicles, one third (33%) are using leaded in a vehicle designed for unleaded fuel.

Misfueling is lowest in communities with over one million inhabitant (8%) as compared to those with 500,000 to 800,000 residents (10%) or with 100,000 to 400,000 (14%).

By size class, misfueling is most likely to take place among motorists of small trucks and vans (29%) as compared to other size classes (ranges from 5% to 15%).

(Among the 26% of motorists driving vehicles designed to run on leaded gasoline, we find that three out of ten (32%) are, in fact, fueling with unleaded. We understand that premium leaded gasoline is not universally available, and that some motorists use premium unleaded to prevent their engines from knocking.)

Incidence of Misfueling by Urban Centre

	Total Unleaded*	Misfuelers**	% of Misfuelers
Regina	323	114	35
Calgary	303	60	20
Trois-Rivières	323	59	18
Winnipeg	246	42	17
Vancouver	290	38	13
Toronto	330	38	12
Halifax	318	36	11
Ottawa	346	32	9
Montreal	331	29	9
Sudbury	318	26	8
Total	3,128	474	12***

---

* We calculated the number of actual unleaded designated vehicles by multiplying the percentage of unleaded designated vehicles by the sample size. (See computer table number 17 for fuel designation).

** The actual sample of misfuelers was drawn from Q.8, misfuelers only. (See computer table number 18).

*** The data from this stratified sample were weighted in accordance with community size. (Initially, the sample was stratified to provide a base up over 400 observations per city in order to ensure an **equivalent** margin of error for the results of each city. Weighting by community size ensures that the total results reflect each centre's proportion of the total population of the ten centres.)

5.2 Misfueling by Urban Centre

Based on survey findings, we have determined the incidence of misfueling as shown on the table on the opposite page.

Clearly, Regina, by far, is the leading misfueling centre under study. Just over one third of drivers of vehicles designed to use unleaded gasoline misfuel in Regina (35%). The same holds true for approximately one out of five drivers in Calgary (20%), Trois-Rivières (18%), and Winnipeg (17%). Conversely, Sudbury has the lowest misfueling rate; only 8% of drivers there misfuel, followed by Ottawa (9%) and Montreal (9%).

Trends in Misfueling

	Incidence of Misfueling	
	1985	1978
Total Sample of Observations	(4,311)	(6,878)
	%	%
Regina	35	28
Calgary	20	17
Trois-Rivières	18	N/A
Winnipeg	17	N/A
Vancouver	13	7
Toronto	12	0
Halifax	11	10
Ottawa	9	7
Montreal	9	2
Sudbury	8	N/A
	12*	6*

* Caution should be exercised in comparing total survey findings in 1985 and 1978 due to the different number of centres in each study.

5.3 Trends in Misfueling

The reader should note that the results for **total** survey findings are not comparable, because the present survey includes three additional centres. Nevertheless, based on findings from the same seven centres, it is clear that the rate of misfueling has increased. Among these same centres, the rise has been especially sharp in Toronto (+12%), Regina (+7%), Montreal (+7%), and Vancouver (+6%). The rise has been somewhat less in Calgary (+3%), Ottawa (+2%), and Halifax (+1%).

Regional Distribution of Misfuelers

Total Sample: (474)

	Distribution	
	% Vehicular Observations*	% misfuelers
Toronto	31	31
Montreal	29	22
Vancouver	13	13
Ottawa	7	6
Calgary	6	10
Winnipeg	6	7
Halifax	3	3
Regina	2	5
Sudbury	1	1
Trois-Rivières	1	2
	99	100

* Given that no data exist for the actual total number of vehicles within each of these ten metropolitan areas, we used the 1981 Canadian census for population. This presumes a correlation between number of people and number of vehicles.

5.4 Regional Distribution of Misfuelers

The table on the opposite page contrasts the weighted regional percentage distribution of vehicular observations at gasoline pumps in the ten centres (left hand column) with the distribution of misfuelers across these same centres (right hand column). Clearly, misfuelers are 'overrepresented' in Calgary (+4%), Regina (+3%), Winnipeg (+1%) and Trois-Rivières (+1%). Conversely, they are 'underrepresented' in Montreal (-5%) and Ottawa (-1%).

Nevertheless, the incidence of misfueling is a problem everywhere. For example, although Toronto and Montreal drivers of vehicles designed for unleaded gasoline are less likely to misfuel than drivers in other centres (see page 35), they still represent over one half (53%) of cases of misfueling in these ten centres.

Misfuelers as a Percentage of Total Vehicles

	Total Vehicular Observations*	Misfuelers**	Total
Regina	430	114	27
Calgary	432	60	14
Trois-Rivières	430	59	14
Winnipeg	432	42	10
Vancouver	433	38	9
Toronto	433	38	9
Halifax	430	36	8
Ottawa	432	32	7
Montreal	430	29	7
Sudbury	429	26	6
Total	4,311	474	9***

* Includes both unleaded and leaded designated vehicles.

** The actual sample of misfuelers was drawn from Q.8, misfuelers only. (see computer table number 18.)

*** The data from this stratified sample were weighted in accordance with community size. (Initially, the sample was stratified to provide a base of 400 observations per city in order to ensure an equivalent margin of error for the results of each city. Weighting by community size ensures that the total results reflect each centre's proportion of the total population of the ten centres.

5.5 Misfuelers as a Proportion of Total Vehicles

The table on the opposite page denotes the percentage which misfuelers represent out of the total passenger vehicle population under study (both unleaded and leaded) excluding buses.

Overall, misfueled vehicles represent 9% of the total passenger vehicles in circulation in these ten centres.

Q.9 **Manner of Misfueling**

Sample size**	(474)
	%
Station substituted nozzle	4
Filled tank slowly	3
Used a funnel or adaptor	*
Modified receptacle	91
	98

---

* Less than 1%

** Includes (12%) of motorists who used leaded gasoline in a vehicle designed to use unleaded.

5.6 Manner of Misfueling

Virtually nine out of ten misfuelers (91%) have modified the fuel receptacles of their vehicle in order to facilitate regular misfueling*. Four percent are observed availing themselves of a smaller nozzle which certain service stations have placed on at least one of their leaded gasoline pumps. Three percent were seen filling their tanks slowly.

In the 1978 study, it was found that 83% of misfuelers had tampered with the inlet receptacle of their vehicles to facilitate regular fueling with leaded gasoline.

---

* Given the need for discretion on the part of our observers, the determination of the incidence of tampering with the receptacle was obtained partly through direct observation and partly through a process of elimination; unleaded designated vehicles which were filled with leaded gasoline are assumed to have tampered receptacles if they were not filled using a substituted nozzle or funnel, or were not filled slowly.

Q.10 I would like to ask you why you use leaded gasoline in your vehicle, rather than unleaded. (PROBE, WITHOUT SUGGESTING, FOR SPECIFIC DETAIL)

Total Sample of Misfuelers	(474) %
My car is designed for it	58
Cheaper in price	32
Better mileage/ performance	3
Cheaper & performance	2
Cheaper & mileage	*
Other responses	3
	98

* Less than 1%

5.7 Reason for Misfueling

When our observers asked misfuelers why they use leaded gasoline, almost six out of ten (58%) answer that their vehicle is designed to use leaded. Only one out of three (32%) misfuelers attribute the lower cost of leaded as the reason. Less then one out of ten (8%) cite other reasons, such as better mileage or performance, or a mixture of the above responses.

The incidence of acknowledging that price is the main reason for misfueling is highest in Montreal (40%), Halifax (36%) and Calgary (33%).

6. APPENDICES

Appendix 6.1

DATA COLLECTION INSTRUMENTS

Service-Station no: ___ ___ ___ ___

INCI INC.

Projet : 85-445

Questionnaire no.: ___ ___ ___ ___ ___
1 2 3 4 5

Month Day

Date: ___ ___ ___ ___
6 7 8 9

FUEL SWITCHING STUDY

Service-Station Information

1- City

Vancouver	01	Toronto	05	Montréal	08	(10-11)
Calgary	02	Sudbury	06	Trois-Rivières	09	
Regina	03	Ottawa	07	Halifax	10	
Winnipeg	04					

2- Type of Station

Full serve	1	(12)
Self serve	2	
Both	3	

3- Service-station brand name

Esso	1	(13)
Gulf	2	
Petro-Canada	3	
Shell	4	
Sunoco	5	
Texaco	6	
Ultramar (or Golden Eagle)	7	
Other: _____ (specify)	8	

4- Address of station / Intersections:

_____

_____

_____

_____

_____

5- Gasoline offered

A) Leaded gas	YES	1	(14)
	NO	2	TERMINATE, REPLACE SERVICE STATION
B) Unleaded gas	YES	1	(15)
	NO	2	

6- Incidence of nozzle substitution on leaded gasoline pumps only
(Smaller sized nozzle used on leaded gasoline pumps)

	YES	1	(If the nozzle has the size of the gage) (16)
	NO	2	

Service-Station no.: __ __ __ __

Vehicle Information:

7- Car brand name and model name:

Brand name: _____ (specify)

Model name: _____ (specify)

OFFICE USE ONLY

Manufacturer:

American Motors	1			(17)
Chrysler	2			
Ford	3	Origin: Domestic	1	(18)
General Motors	4	Import	2	
Datsun (Nissan)	5			
Honda	6	Import: Japanese	1	
Toyota	7	European	2	(19)
Volkswagen	8	Other	3	
Other: _____ (specify)	9	_____ (Specify)		

Size class of vehicle:

sub compact	1	
compact	2	
mid-size	3	
full size	4	(20)
truck / van	5	
Other: _____ (specify)	6	

8- Observation of type of gasoline actually put into vehicle

Type of gasoline used:	leaded	1	(21)
	unleaded	2 TERMINATE INTERVIEW	

9- If leaded gasoline used, note:

Station substituted nozzle (if yes to Q. 6)	1	
Filled tank slowly	2	(22)
Used a funnel or adapter	3	
Other:	A	

ASK ONLY THOSE DRIVERS WHO USED LEADED GASOLINE:

10- I would like to ask you why you use leaded gasoline in your vehicle, rather than unleaded. (Probe, without suggesting, for specific detail)

Cheaper in price	1	
My car is designed for it	2	
Better mileage	3	
Better performance	4	(23)
Other: _____ (specify)	5	

FOR OFFICE USE ONLY: Fuel designation of vehicule

leaded	1	(24)
unleaded	2	

Interviewer: _____ Supervisor: _____

Station-Service no.: ___ ___ ___ -

INCI INC.

No. du questionnaire: ___ ___ ___ ___ -
1 2 3 4

Projet: 85-443

Date: Mois ___ ___ Jour ___ ___
6 7 8 9

REMPLACEMENT D'ESSENCE

Information sur la station-service :

1- Ville

Vancouver	01	Toronto	05	Montréal	08	
Calgary	02	Sudbury	06	Trois-Rivières	09	
Régina	03	Ottawa	07	Halifax	10	(10-11
Winnipeg	04					

2- Type de station-service:

Service complet	1	(12)
Libre service	2	
Les deux	3	

3- Nom de la station-service

Esso	1	
Gulf	2	
Pétro-Canada	3	(13)
Shell	4	
Sunoco	5	
Texaco	6	
Ultramar (ou Aigle d'or)	7	
Autre: _____ (préciser)	8	

4- Adresse de la station-service / intersections:

_____

_____

_____

_____

5- Essence offerte

Avec plomb (Ordinaire)	OUI	1		(14)
	NON	2	TERMINER ET CHANGER DE STATION-SERVICE.	
Sans Plomb	OUI	1		(15)
	NON	2		

6- Incidence de substitution du bec-verseur sur les pompes à essence avec plomb seulement (Bec-verseur plus petit utilisé sur les pompes à essence avec plomb)

OUI	1	(Si le bec-verseur est du même diamètre que la jauge)	(16
NON	2		

Station-Service no.: __ __ __ __

information sur le véhicule:

7- Marque et modèle de l'automobile

Marque: _____
précisez

Modèle: _____
précisez

A L'USAGE DU BUREAU SEULEMENT

Constructeur:	American Motors	1		(17)
	Chrysler	2	Origine:	
	Ford	3	Domestique	1 (18)
	General Motors	4	Importée	2
	Datsun (Nissan)	5		
	Honda	6	Importations:	
	Toyota	7	Japonaise	1 (19)
	Volkswagen	8	Européenne	2
	Autre: _____ précisez	9	Autre: _____ précisez	3

Catégorie d'automobile:

Sous-compacte	1	
Compacte	2	
Intermédiaire	3	(20)
Grosse voiture	4	
Camion / Fourgonnette	5	
Autre _____ précisez	6	

8- Observation du type d'essence versé dans l'automobile.

Type d'essence utilisé:

Avec plomb	1	(21)
Sans plomb	2	TERMINER

9- Si l'essence avec plomb (ordinaire) a été utilisée, notez:

Bec verseur substitué par la station-service (Si OUI à la Question 6.)	1	
Remplissage lent	2	(22)
Utilisation d'un entonnoir ou d'un adapeur	3	
Autre	A	

A DEMANDER SEULEMENT AUX CONDUCTEURS QUI UTILISENT L'ESSENCE AVEC PLOMB (ORDINAIRE)

10- Pourriez-vous me dire pourquoi vous utilisez l'essence ordinaire (avec plomb) dans votre automobile, plutôt que l'essence sans plomb ?

Moins dispendieux	1	
La fabrication de l'auto l'exige	2	
Meilleur rendement au kilométrage	3	(23)
Meilleure performance	4	
Autre: _____	5	

POUR USAGE DU BUREAU SEULEMENT: Essence appropriée — Avec plomb 1, Sans plomb 2 (24)

Interviewer: _____ SUPERVISEUR: _____

Interviewer Instructions

PROJECT: 85-443

FINAL VERSION

Hello !

Here are the instructions for this project. The study's aim is to observe the type of fuel used by motorists in various Canadian service-stations.

The study will be conducted from August the 29 th to September the 10 th. All the questionnaires must be returned to Montreal by September the 11 th.

There are two parts in this study.

1° OBSERVATIONS OF FUEL CONSUMPTION

For your city _____, you must visit _____ service-stations and complete _____ observations at each service-station. It adds up to a total of 430 observations for your city.

It is very important to divide with care the choice of your service-stations in order to cover all the neighbourhoods of your city. Also, among the _____ service-stations that you must visit, you will have to go to both stations with full service and self-serve stations at random. Take note that you must conduct your observations from the actual tanking unit; therefore, if the station you are at offers diesel gasoline and that the pumps for it is not located with the pumps for leaded and unleaded gasoline, you only have to make your observations from the main tanking unit and do not have to consider the diesel pump.

Of course, you will select the service-stations yourself, provided they are part of our sampling. All you have to do is to show the introduction letter to the station manager (or whoever else that will be in charge at the moment of your visit) so they can agree to your presence at their station. In case of a refusal, you must select another station.

When you arrive at the gas station, you must, first of all, fill out the "Fuel Switching study" form, the yellow sheet.

- Write the date (day-Month)
- Questionnaire no, (do not write in this space)

1- City: circle the number corresponding to your city

.../2

2- Type of service-station: Indicate if "self service" or "full service"

3- Name of the service-station: Circle the answer. If other specify:
ex.: Joe Williams Garage - SPUR

4- Service-station address / Nearest street intersection

Try to be as accurate as possible

ex.: 229 Main Street
corner of Church Street

5- Type of fuel available: Note the types of fuel offered by the station (more than one answer)

N.B.: If leaded gasoline is not available, circle "NO" and end your observation. Transfer this information on a pink form and keep it for the second part. You cannot conduct your observations at this station. Replace this station by another where leaded gasoline will be available, this meaning that all the service-stations that you will be visiting in the first part will have to retail leaded gasoline, otherwise you cannot conduct your observations.

6- Incidence of nozzle substitution on leaded gasoline pumps only.

You will have a gauge used for measuring the diameter of the tip of the leaded gasoline nozzles. With it, you must check the diameter of the tip of the nozzle. All you have to do is to try to insert the tip of the leaded gasoline nozzle all the way into the gauge. If it fits all the way on one or more leaded nozzle, circle YES on Q. 6.

Once you have fill out the form and established the eligibility of the garage, you may proceed to the "vehicle information" form (White sheet).

* You must complete one questionnaire for each observation (vehicle).

VEHICLE INFORMATION

7- Make and model of car: ex.:

MAKE	MODEL
Honda	Accord
BMW	3201
Pontiac	Sunbird 2000
Oldsmobile	Cutlass Supreme

**Note as much information as you can gather. Look at the side, the back or even inside the car for details. Often, the model of the car will be written on the glove compartment. We'd rather prefer you get too much information than not enough.

DO NOT WRITE IN SPACES MARKED "FOR OFFICE USE ONLY"

8- Observations on the type of fuel purchased:

Circle the type of gasoline purchased by the motorist.

N.B.: If motorist buys unleaded gasoline end your observations. This questionnaire is completed.

Do not note diesel users.

9- If leaded gasoline is purchased:

Check one of these answers only:

- Nozzle substituted by service-station
  (Circle automatically this answer if the answer to question 6 was YES.) 1

- Slow filling up
  (Check this answer if motorist fills car up very slowly) 2

- Use of funnel or adaptor
  (If a funnel or adaptor is used by motorist for tanking) 3

- Other
  (If tanking is done normaly) A

10- Ask this question to motorist who has purchased leaded gasoline.

2° PART: THE OTHER SERVICE-STATIONS

You must also visit _____ service-stations on your route. For each one, fill out the pink "Fuel Switching Study" form. You may stop at stations on your route between the garages where you must complete block observations. In this quota, you may include stations which don't retail leaded gas. In the case where there aren't enough stations in your city to complete the quota, leave me a note specifying the matter.

If you need more information of have any question, do not hesitate to call your local supervisor or our office.

INCI MONTREAL

1-(514)-288-2123

ask for: Johanne Préfontaine
or Danielle Audet

GOOD LUCK

Projet: 85-443

VERSION FINALE

Bonjour,

Voici les instructions pour ce projet. L'étude consiste en l'observation du type d'essence utilisé par le consommateur dans différentes stations-services à travers le Canada.

L'étude se fait du 29 août au 10 septembre 1985. Tous les questionnaires doivent être de retour à Montréal le 11 septembre 1985.

Il y a 2 étapes dans ce projet:

1° OBSERVATIONS DES CONSOMMATIONS D'ESSENCE

Pour votre ville, _____; vous devez visiter _____ stations-services et faire _____ observations par stations-services. Ce qui fait au grand total 430 observations pour votre ville. Il est très important de bien répartir le choix de vos stations-services afin de couvrir tous les coins de la ville. De plus, des _____ stations-services que vous devez visiter; il y aura des stations "service complet" et des stations "libre service" , au hasard. A bien noter que vos observations se font dans les ilôts; c-e que si la station-service offre du diésel et que la pompe se trouve à part (voire éloignée) des ilôts, vous n'avez pas à vous en préoccuper.

Evidemment vous avez le choix des stations-services: pourvu qu'elles soient dans l'échantillon. Vous n'aurez qu'à présenter la lettre d'introduction au responsable de la station-service afin qu'il puisse accepter que vous fassiez vos observations sur son terrain. S'il refuse il vous faudra en trouver une autre !

Lorsque vous arrivez à une station-service, vous devez tout d'abord remplir le formulaire "Remplacement d'essence", la feuille jaune.

*Inscrivez la date (mois-jour)

*No. de questionnaire (Ne vous en occupez pas)

1- Ville (encerclez le numéro qui correspond à votre ville)

2- Type de station-service (encerclez si "libre service" ou " service complet")

3- Nom de la station-service: Encerclez le nom de la station-service
Si autre spécifier:
ex.: Garage Albert Williams - SPUR

.../2

4- Adresse de la station-service / Intersection:

Essayer d'être le plus précis possible.
ex.: 229 rue Principale
au coin de la rue de l'Eglise

5- Essence offerte: Vous notez le(s) type(s) d'essence(s) offert(s) par le garage. (Plusieurs choix)

N.B.: *S'il n'offre pas d'essence avec plomb, vous encerclez non et vous terminez. Reportez ces informations sur un formulaire rose et gardez-le pour la 2ième étape. Vous ne pouvez faire vos observations à ce garage, remplacez cette station-service par une autre, ce qui veut dire que toutes les stations-service à visiter pour la 1ère étape devront offrir de l'essence avec plomb: sinon vous ne pourrez faire vos observations.

6- Incidence de substitution du bec-verseur sur les pompes d'essence avec plomb (ordinaire) seulement.

Vous disposez d'une jauge pour mesurer le diamètre de l'extrémité du (des) bec(s) verseur(s) de l'essence avec plomb. Tout ce que vous avez à faire c'est d'essayer d'insérer le bout du bec-verseur de l'essence avec plomb au fond de la jauge. Si vous pouvez l'insérer à fond dans un ou plusieurs des becs verseurs avec plomb, encerclez OUI à la Q. 6.

Lorsque vous avez rempli ce formulaire et que le garage est éligible, vous pouvez passer aux formulaires "information sur le véhicule", les feuilles blanches.

* Vous devez compléter 1 questionnaire pour chaque observation (véhicule).

7- Marque et modèle de l'automobile

Marque ex.:	Honda	BMW	Pontiac	Oldsmobile
Modèle ex.:	Accord	320i	Sunbird 2000	Cutlass Supreme

** Noter le plus d'informations que vous pouvez. Regardez le côté, l'arrière de l'auto et même au besoin l'intérieur de l'auto. Souvent on peut obtenir le modèle de l'auto indiqué sur le coffre à gants. Donc très important d'obtenir plus d'informations que pas assez.

** N'inscrivez rien dans les espaces "USAGE DU BUREAU SEULEMENT"

8- Observation sur le type d'essence versé dans l'automobile

*Encerclez le type d'essence utilisé par le consommateur

N.B.: Si la personne a utilisé le sans plomb, vous terminez. Ne faire aucune observation d'utilisation du diésel.

9- Si l'essence avec plomb a été utilisée, notez: (un seul choix de réponse)

- Bec-verseur substitué par la station-service (pour le choix reportez-vous à la question 6, si le bec entrait dans la jauge, vous encerclez automatiquement ce choix) 1
- Remplissage lent (Observer si le consommateur fait le plein très lentement) 2
- Utilisation d'un entonnoir ou d'un adapteur (Le consommateur utilise un entonnoir ou un adapteur pour faire le plein, ça sera évident) 3
- Autre (Prend de l'essence de façon régulière) A

.../3

10- Vous posez cette question au consommateur qui a utilisé de l'essence avec plomb. (ordinaire)

2e étape: LES AUTRES STATIONS-SERVICES

Vous devez visiter également _____ stations-services sur votre route. Pour chacune, vous remplissez un formulaire "Remplacement d'essence" Rose. Vous vous arrêtez aux stations sur votre route entre les garages où vous devez compléter les blocs observations. Vous pouvez inclure dans ce quota les stations où on n'offre pas d'essence avec plomb. Si jamais il n'y avait pas assez de stations-services dans votre ville pour remplir le quota, laissez-moi une note pour spécifier.

Si vous avez besoin de plus d'information(s), n'hésitez pas à communiquer avec votre superviseur local ou à nos bureaux.

INCI MTL (514) 288-2123

Demander: Johanne Préfontaine
ou Danielle Audet.

BONNE CHANCE!

August 14, 1985

Dear Sir,
Dear Madam:

On behalf of the Information Collecting Institute, a firm specialized in public opinion surveys and market studies, I would like to request your collaboration for a major pan-Canadian study about the types of fuel used by Canadian motorists.

We would be very grateful if you agreed to having one of our interviewers report to your service-station to gather data on the types of fuel purchased by motorists in relation to the make and model of their vehicle. The interviewer may wish to briefly chat with some of the customers.

If you wish to get more information, do not hesitate to call us collect at 1-514-288-2123.

Thank you very much for your cooperation.

Johanne Préfontaine
Head-Supervisor

Appendix 6.2

DATA COLLECTION REPORTS

FIELD REPORT ON SERVICE STATIONS

Urban Centre	Station Observations	Refusals By Managers	Final Sample*
Vancouver	50	0	50
Calgary	51	1	50
Regina	56	5	51
Winnipeg	51	1	50
Toronto	51	1	50
Sudbury	49	1	48
Ottawa	54	4	50
Montreal	50	0	50
Trois-Rivières	48	0	48
Halifax	50	0	50
TOTAL	510	13**	497

---

* Note that all 497 cooperative service stations provide leaded gasoline while more than 99% offer unleaded gasoline.

** These refusals constitute a rate of under 3% out of the 510 total station contacts. Refusals are concentrated in Regina (9%) and in Ottawa (7%)

FIELD REPORT ON VEHICULAR OBSERVATIONS

Urban Centre	Vehicular Observations	Number of Service Stations
Vancouver	433	12
Calgary	432	9
Regina	430	5
Winnipeg	432	9
Toronto	433	15
Sudbury	429	5
Ottawa	432	9
Montreal	430	15
Trois-Rivières	430	5
Halifax	430	5
TOTAL	4,311	89

Appendix 6.3

DATA PROCESSING INSTRUMENTS

CLASSIFICATION: ORIGIN OR IMPORT

MARQUE	MANUFACTURIER	ORIGINE	PAGE
ALFA ROMEO		Italienne	1
AMX	A.M.	Domestique	1
AUDI		Allemande	1
AUSTIN		Angleterre	1
B.M.W.		Allemande	1
BUICK	G.M.	Domestique	1
CADILLAC	G.M.	Domestique	1
CHEVROLET	G.M.	Domestique	1-2
CHRYSLER	CHRYSLER	Domestique	2
CONCORD	A.M.	Domestique	2
DATSUN	DATSUN NISSAN	Japonaise	2
DODGE	CHRYSLER	Domestique	2
EAGLE	A.M.	Domestique	2
FIAT		Italienne	2
FORD	FORD	Domestique	3
GREMLIN	A.M.	Domestique	3
HONDA	HONDA	Japonaise	3
HORNET	A.M.	Domestique	3
HYUNDAI		Coréenne	3
JAGUAR	JAGUAR	Anglaise	3
JAVELIN	A.M.	Domestique	3
LADA		Russe	3
LANCIA		Italienne	3
LINCOLN	FORD	Domestique	3
M.G.B.		Anglaise	4
MATADOR	A.M.	Domestique	3
MAZDA		Japonaise	4
MERCEDEZ-BENZ		Allemande	4
MERCURY	FORD	Domestique	4
MITSUBISHI		Japonaise	4
OLDSMOBILE	G.M.	Domestique	4
PACER	A.M.	Domestique	4
PEUGEOT		Française	4
PLYMOUTH	CHRYSLER	Domestique	4-5
PONTIAC	G.M.	Domestique	5
PORSCHE		Allemande	5
RENAULT		Française	5
ROLLS ROYCE		Anglaise	5
ROVER		Anglaise	5
SAAB		Suédoise	5
SKODA		Tchécoslovaque	5
SPIRIT	A.M.	Domestique	6
SUBARU		Japonaise	6
SUZUKI		Coréenne	6
TOYOTA		Japonaise	6
TRIUMPH		Anglaise	6
VALIANT	CHRYSLER	Domestique	6
VOLKSWAGEN		Allemande	6
VOLVO		Suédoise	6

Environment Canada / Environnement Canada
Environmental Protection / Protection de l'environnement

Industrial Programs Branch
Transportation Systems Division
Ottawa, K1A 1C8

Your file / Votre référence

Our file / Notre référence
4492-3

November 18, 1985

Re: Fuel Designation of Vehicles

Mr. Michael Saykaly
Optima Consultants
46 Elgin Street, Suite 38
Ottawa, Ontario
K1P 5K6

Dear Michael:

On October 17, 1985 Michelle Renaud and yourself presented preliminary data from the Motor Vehicle Fuel Switching Study and on October 18, copies of the draft report were received.

On October 23, copies of the draft report were sent out for review and comments. Several anomalies have been discussed with you since then which could relate to the fuel designation of the vehicles involved. These are:

(a) The number of leaded (12%) versus unleaded (87%) vehicles (Table on page 27) which is somewhat different than other estimates for catalyst equipped vehicle populations;

(b) The number of respondents who thought their vehicles were lead tolerant (64%) (Table on page 44) these being persons observed buying leaded fuel; and

(c) The number of fueling observations that were categorized as having been done with an enlarged inlet (92%) (Table on page 42).

The purpose of this letter and the enclosed tables is to clarify and document for your use the published fuel requirements for motor vehicles, as shown in Transport Canada Fuel Consumption Guides (1978 to 1985). The attached tables list make and model information for three categories of vehicles as follows:

Category 1. Old cars, not listed in Guides, classed as lead tolerant which have no catalyst. All of these vehicles can be crossfuelled, i.e. fuelled with unleaded fuel but not misfuelled.

Canada

In order to conserve energy and resources, this paper contains post-consumer fibre.

A des fins de conservation de l'énergie et des ressources, ce papier contient des fibres recyclées.

Category 2. Vehicles listed in Guides since the introduction of the catalyst (1975) which have been marketed as lead tolerant since they are not equipped with a catalyst. All of these vehicles can be crossfuelled but not misfuelled.

Category 3. Vehicles listed in Guides which are "hybrids", i.e., one make model design is available as catalyst equipped or without catalyst. All of these vehicles can be classified according to the gasoline purchased at a service station, or classified as lead tolerant

This approach and the recommended designation of vehicle fuel type is unchanged from that previously discussed, and when confirmed by your data processing contractor, should guarantee results which would be generally acceptable.

Transport Canada have reviewed and agreed to the attached listing as being correct provided that only vehicle makes not listed are coded as unleaded gasoline vehicles and therefore subject to misfuelling when leaded fuel is used .

If you have any questions, please do not hesitate to call me.

Yours truly,

N. Ostrouchov

1. Old cars, not listed in Guides classed as lead tolerant. All of those vehicles can be crossfuelled only (not misfuelled).

2. Vehicles listed in Guides and classed as lead tolerant all the time. All of those vehicles can only be crossfuelled (not misfuelled).

3. Vehicles listed in Guides and clased as lead tolerant for some vehicles. All of those vehicles if using unleaded gasoline should be classed as unleaded. If they use leaded gasoline, they should be classed as lead tolerant. Those vehicles cannot be misfuelled or crossfuelled.

VEHICLE FUEL DESIGNATION
Passenger Cars

Manufacturer	①	②	③
AMC	Hornet		Pacer, Gremlin, Concord, all Jeeps, Grand Wagoneer CJ7, Cherokee, Vagineer
Audi	Fox		GT, Coupe, 4000, 4000S 5000, 5000S, 5000 Turbo
BMW	2002, 3.0		ALL
Chrysler Dodge Plymouth	Polara, Swinger	Newport, Chrysler Arrow, Colt, Aries, Reliant, 600, New Yorker	Coronet, Dart, Aspen Cordoba, Duster, Volare Valiant, Fury, Charger, Monaco,
Datsun Nissan	610, 1200, 620	F10, B210, 510, 280Z, 240Z, 310, Micra, Pulsar NX, Sentra	200 SX

Manufacturer	(1)	(2)	(3)
Ford Mercury Lincoln	Meteor, Galaxie, Galaxie 500,		Fairmont, LTD II, Mustang II Pinto, XR-7, Thunderbird, Bobcat,Cougar,Zephyr,Ford, Mercury
Fiat	124	128	
GM Buick Cadillac Chevrolet Oldsmobile Pontiac	BelAir, Biscayne Chevelle	Firefly, Sprint	None
Honda		Accord, Civic (except 1500S, CRX which are unleaded)	Prelude,
Hyundai		ALL	
Innocenti		ALL	
Mazda	808	929	GLC
Peugot		504, 604	
Renault	15, 17	30	12TL, 5GTL

Manufacturer	(1)	(2)	(3)
Skoda		ALL	
Suzuki		ALL	
Suburu		DL, FE, GF, Sedan Wagon 4WD	
Toyota	Carina, Mark II		Celica, Corolla, Corona
Volkswagen	Karmann, VW Type 3, VW Squareback, 411	Rabbit (except GT1 and convertible) Jetta (except GL1) Beetle	Rabbit Convertible Sirocco
Volvo	142, 145, 164	242, 244, 245	
Triumph	Mini	TR7	

LIGHT DUTY TRUCKS/VANS

Manufacturer	(1)	(2)	(3)
AMC			Eagle, Scrambler,Cherokee, Wagoneer, J-10,CJ-5/7
Jeep			
GMC Chevrolet	Large trucks and cube delivery vans	C-30	C-20
Datsun Nissan		Sportruck	Pickup
Chrysler Dodge	Large trucks, cube and delivery vans	Rampage	100,127, Tradesman, Sportsman,150,50,Voyager, Caravan, Mini Ram
Ford	Large trucks, cubes delivery	F300-F350	Ranchero, Courier, F250
Mazda		1800	2000
Lada		Niva	
Toyota			Hilux, Land Cruiser
Suzuki		1910, Samurai	
Volkswagen		Campmobile	Vanagon

CLASSIFICATION: LEADED FUEL DESIGNATION

INCI INC.
85-443
ESSENCE-OPTIMA

VOITURES UTILISANT
DE L'ESSENCE AU PLOMB

AMC:	Hornet Pacer Javelin Gremlin
Chevrolet:	Sprint
Chrysler:	Le Baron New Yorker Town & Country
Dodge:	Aries Aries Wag.-Fam. 600
Honda:	Tous les modèles
Hyundai:	Tous les modèles
Nissan:	Micra Pulsar Sentra Sentra Wag.-Fam.
Plymouth:	Caravelle Reliant Reliant Wag.-Fam.
Pontiac:	Firefly 1000
Skoda:	120 GLS 120 L 130 C
Suzuki:	Forsa
Volkswagen:	Golf Jetta

Camions, van . . . . . .

Dodge:	Caravan Mini Ram Van
Plymouth:	Voyager
Jeep:	Cheerokee Wagoneer 4 X 4
Lada:	Niva
Suzuki:	Samouraï (tous les modèles)

CLASSIFICATION: SIZE CLASS
(EPA, USA)

MARQUE	MODELES	GRANDEUR
ALFA-ROMEO (IT.)	Alfa Roméo	Sous-compacte
	Spider Veloa	Sous-compacte
AMX (AM)	AMX	Sous-compacte
AUDI (AM)	Audi Coupe	Sous-compacte
	Audi 100	Sous-compacte
	Audi Fox	Sous-compacte
	Audi 4000	Sous-compacte
	Audi 5000s /5000s wagon	Intermédiaire (M-S)
	Audi Quattro	Sous-compacte
AUSTIN(ANGL)	Marina	Sous-compacte
	Mini	Sous-compacte
	Spider	Sous-compacte
BMW (ALLEMANDE)	733	Compacte
	S-Séries	Compacte
	BMW	Sous-compacte
BUICK (GM)	Appollo	Compacte
	Century/Century wagon	Intermédiaire (M-S)
	Electra /wagon	Grosse (F-S)
	L.T.D.	Grosse
	Le Sabre / wagon	Grosse (F-S)
	Park Avenue	Grosse
	Regal	Intermédiaire (M-S)
	Riviera	Intermédiaire (M-S)
	Skyhawk (+ station-wagon)	Compacte
	Skylark	Compacte
	Somerset Regal	Compacte
CADILLAC (GM)	Brougham	Grosse (F-S)
	Calais	Grosse (F-S)
	Cimarron	Grosse (F-S)
	Deville	Grosse (F-S)
	Eldorado	Intermédiaire (M-S)
	Fleetwood (75 Fleetwood)	Grosse (F-S)
	Limousine	Grosse (F-S)
	Seventy Five	Grosse (F-S)
	Seville	Intermédiaire (M-S)
CHEVROLET (GM)	Bel-Air	Intermédiaire
	Biscayne	Intermédiaire
	Camaro	Sous-compacte
	Caprice/wagon	Grosse (F-S)
	Cavalier (+ Cavalier wagon)	Compacte
	Celebrity/(Celebrity wagon)	Intermédiaire (M-S)
	Chevelle	Compacte
	Chevette	Sous-compacte
	Citation	Intermédiaire (M-S)
	Corvette	Sous-compacte
	Custom Deluxe	Grosse
	Impala	Grosse (F-S)
	Malibu	Intermédiaire (M-S)
	Monte Carlo	Intermédiaire (M-S)
	Monza	Sous-compacte
	Nova-concours (Nova-concours)	Compacte
	Sprint	Sous-compacte

MARQUE	MODELES	GRANDEUR
CHEVROLET (GM) SUITE	Vega	Sous-compacte
CHRYSLER (CHRYSLER)	Champ	Sous-compacte
	Cordoba	Intermédiaire (M-S)
	Daytona	Sous-compacte
	Fifth Avenue	Intermédiaire (M-S)
	Laser	Sous-compacte
	Le Baron (GTS aussi)	Intermédiaire (M-S)
	Limousine	Intermédiaire (M-S)
	Newport	Grosse (F-S)
	New Yorker	Intermédiaire (M-S)
	Reliant	Intermédiaire (M-S)
	Town & Country / wagon	Intermédiaire (M-S)
CONCORD (AM)	Concord	Compacte
DATSUN (JAP)	Maxima -810 (Maxima)	Compacte
	Maxima - wagon	Compacte
	Nissan Sentra	Sous-compacte
	Sentra Wagon	Compacte
	Sentra Pulsar	Sous-compacte
	Stanza	Compacte
	200 (200SX)	Sous-compacte
	210	Sous-compacte
	240	Sous-compacte
	260	Sous-compacte
	280	Sous-compacte
	310	Sous-compacte
	510	Sous-compacte
	300 ZX	Sous-compacte
DODGE (CHRYSLER)	024 Tomaso	Sous-compacte
	400	Intermédiaire (M-S)
	600	Intermédiaire (M-S)
	Aries / Wagon	Intermédiaire (M-S)
	Arrow	Sous-compacte
	Aspen	Compacte
	Challenger	Sous-compacte
	Charger	Sous-compacte
	Colt	Sous-compacte
	Colt Vista (station-wagon)	Compacte
	Conquest	Sous-compacte
	Custom	Grosse
	Dart	Compacte
	Daytona	Sous-compacte
	Diplomat	Intermédiaire (M-S)
	Lancer	Intermédiaire (M-S)
	Mirada	Intermédiaire (M-S)
	Monaco	Grosse (F-S)
	Omni	Compacte
	Polara	Grosse
	St-Regis	Grosse (F-S)
	Swinger	Sous-compacte
EAGLE (AM)	Eagle	Compacte
FIAT (IT.)	124	Sous-compacte
	128	Sous-compacte
	131	Sous-compacte
	X 1/9	Sous-compacte
	2000	Sous-compacte

MARQUE	MODELES	GRANDEUR
FIAT (IT.) SUITE	Brava	Sous-Compacte
	Strada	Compacte
FORD (FORD)	Arrora	Compacte
	Bob Cat	Sous-compacte
	Custom 500	Intermédiaire (M-S)
	Escort	Compacte
	Escort wagon	Compacte
	E.X.P. (ou Escort E.X.P.)	Sous-compacte
	Fairmount	Compacte
	Fiesta	Sous-compacte
	Galaxie 500	Grosse
	Granada	Compacte
	LIT.D./L.T.D. wagon	Intermédiaire (M-S)
	Laser	Sous-compacte
	Maverick	Compacte
	Mustang (Mach I)	Sous-compacte
	Pinto	Sous-compacte
	Thunderbird	Grosse (F-S)
	Topaz	Compacte
	Torino (ou Gran Torino)	Intermédiaire (M-S)
	Tempo	Compacte
	L.T.D. Crown-Victoria	Grosse (F-S)
GREMLIN (AM)	Gremlin	Sous-compacte
HONDA (JAP)	Accord	Sous-compacte
	Civic	Sous-compacte
	Civic-wagon	Compacte
	Prélude	Sous-compacte
HORNET (AM)	Hornet	Compacte
HYUNDAI (COREE)	Pony	Sous-compacte
	Stellar	Compacte
JAGUAR (ANGL.)	Jaguar	Sous-compacte
JAVELIN (AM)	Javelin	Compacte
LADA (RUSSE)	Lada	Sous-compacte
	Signet	Sous-compacte
LINCOLN (FORD) (Versaille)	Continental	Intermédiaire (M-S)
	Mark VII	Intermédiaire (M-S)
	Town Car	Grosse (F-S)
LANCIA (...)	Béla-Zégato	Sous-compacte
	Lancia	Sous-compacte
MATADOR (AM)	Matador	Compacte

MARQUE	MODELES	GRANDEUR
MAZDA (JAP.)	626	Compacte
	GLC	Sous-compacte
	GLC Wagon	Compacte
	RX7	Sous-compacte
MERCURY (FORD)	Bob Cat	Sous-compacte
	Capri	Sous-compacte
	Colony Park	Grosse
	Comet	Compacte
	Cougar	Intermédiaire
	Cougar XR7	Grosse (F-S)
	Lynx	Compacte
	Lynx Wagon	Compacte
	LN 7	Sous-compacte
	Marquis / Marquis wagon	Intermédiaire (M-S)
	Monarch (ou Grand Monarch)	Compacte
	Merkur XR 4TI	Compacte
	Grand Marquis	Grosse (F-S)
	Zéphir	Compacte
	Topaz	Compacte
MERCEDEZ-BENZ (ALL.)	Mercedez-Benz 500 Sec	Compacte
	Mercedez-Benz 500 Sel	Intermédiaire (M-S)
	190	Sous-compacte
	380 SL	Sous-compacte
	300	Compacte
M.G. (ANGL.)	M.G.	Sous-compacte
MITSUBISHI (JAP.)	Cordia	Sous-compacte
	Mirage	Sous-compacte
	Starion	Sous-compacte
	Tredia	Sous-compacte
	Galant	Sous-compacte
OLDSMOBILE (GM)	Ciera	Intermédiaire (M-S)
	Cruiser /wagon	Grosse (F-S)
	Cutlass /wagon	Intermédiaire (M-S)
	Delta (Delta 88)	Grosse (F-S)
	Firenza	Compacte
	Firenza-Cruiser wagon	Compacte
	Ninety-Eight	Grosse (F-S)
	Omega	Compacte
	Toronado	Intermédiaire (M-S)
	Calais	Compacte
	Cutlass-Supreme	Intermédiaire (M-S)
PACER (AM)	Pacer	Sous-compacte
PEUGEOT (FRANCE)	505-564	Compacte
	505 Wagon	Intermédiaire (M-S)
PLYMOUTH (CHRYSLER)	Barracuda	Compacte
	Caravelle	Intermédiaire (M-S)
	Colt	Sous-compacte
	Colt-Vista	Compacte
	Champ	Sous-compacte

MARQUE	MODELES	GRANDEUR
PLYMOUTH (CHRYSLER) SUITE	Fury (ou Gran Fury)	Intermédiaire (M-S)
	Horizon	Compacte
	Conquest	Sous-compacte
	Reliant / Reliant wagon	Intermédiaire (M-S)
	Sapporo	Sous-compacte
	Satellite-Seabring	Intermédiaire
	TC 3	Sous-compacte
	Tarismo	Sous-compacte
	Volaré	Compacte
PORSCHE (ALLEMAND)	Porsche	Sous-compacte
PONTIAC (GM)	Acadian	Sous-compacte
	Astre	Sous-compacte
	Bonneville	Intermédiaire (M-S)
	Catalina	Grosse (F-S)
	Fiero	Sous-compacte
	Firebird	Sous-compacte
	Grand AM	Compacte
	Grand Prix	Intermédiaire
	Laurentian	Grosse
	Le Mans	Intermédiaire (M-S)
	Phoenix	Compacte
	Parisienne	Grosse (F-S)
	Pontiac 1000 (ou T 1000)	Sous-compacte
	Pontiac 2000 (Le)	Compacte
	Strato Chief	Grosse
	Sunbird	Compacte
	Sunbird Wagon	Compacte
	Trans-Am	Sous-compacte
	Ventura	Compacte
	Firefly	Sous-compacte
	Pontiac 6000, 6000 wagon	Intermédiaire (M-S)
RAMBLER	AMC	Sous-compacte
RENAULT (FRANCE)	5 (ou le Car)	Sous-compacte
	12	Sous-compacte
	Fuego	Sous-compacte
	18I	Sous-compacte
	18I- 4dr. wagon	Compacte
	Alliance	Compacte
	Encore	Compacte
ROLLS ROYCE (ANGL.)	Carmague	Compacte
	Corniche	Sous-compacte
	Silver Spirit/Spur/Halsanne	Intermédiaire (M-S)
ROVER (ANGL.)	Rover 3500	Sous-compacte
SAAB (SUEDE)	SAAB	Compacte
SKODA	Tchécoslovaque	Sous-compacte

MARQUE	MODELES	GRANDEUR
SPIRIT (AM)	Spirit	Sous-compacte
SUBARU (JAPON)	4 WB	Sous-compacte
	XT	Sous-compacte
	Sedan	Compacte
	Subaru	Sous-compacte
	Subaru wagon	Compacte
SUZUKI (COREE)	Forsa	Sous-compacte
TOYOTA (JAP.)	Camry	Compacte
	Célica	Sous-compacte
	Célica-Supra	Sous-compacte
	Corolla Sport	Sous-compacte
	Corolla	Compacte
	Corona	Sous-compacte
	Cressida wagon	Intermédiaire (M-S)
	Cressida (Luxury Edition)	Compacte
	Starlet	Sous-compacte
	Supra (ou Célica Supra)	Compacte
	Tercel	Sous-compacte
	Tercel Wagon (SR-5)	Compacte
TRIUMPH (ANGL.)	Triumph	Sous-compacte
VALIANT (CHRYSLER)	Duster	Compacte
	Valiant	Compacte
VOLKSWAGEN (ALL.)	Bug (Beattle)	Sous-compacte
	Cabriolet	Sous-compacte
	GTI	Compacte
	Golf	Compacte
	Jetta	Compacte
	Quantum / Quantum Wagon	Compacte
	Scirocco	Sous-compacte
	Rabbit	Sous-compacte
VOLVO	Volvo DL-GL-Turbo-142-242	Compacte
	740/760	Intermédiaire (M-S)
	DL/GL/Turbo/ Wagon	Intermédiaire (M-S)

CODING OF 'OTHER RESPONSES' TO Q.3*

	Nombre		Nombre
IRVING	25	CANGO	2
TURBO	14	SEARS	2
CHEVRON	11	E.M.L.	2
MOHAWK	11	CALEX	2
HUSKY	8	SUPERSAVE	1
CO-OP	8	SHERWOOD COOP	1
DOMO	6	MIDAS	1
REGENT	5	L & B AUTO & CYCLE	1
SUNNY'S	5	V. PLUS	1
GAIN	4	DAVEY MAC	1
SERGAZ	4	BAHERAPH GARAGE	1
SPUR	4	D.X.	1
TEMPO	4	BIG MICHEL	1
TOP VALUE	4	PETROLE MARLI	1
7-11	3	COOP SONIC	1
BEAVER	3	SIDNEY SERVICE TEMPO	1
I.G.S.	3	BEBEL	1
SONIC	3	MR. GAZ	1
REGINA MESSENGER	3	PARKWAY GASBAR	1
THE VIVER STATION	2	DRUMMOND'S GAZ	1

* Small Chains and Independent Service Stations

Appendix 6.4

DETAILED COMPUTER TABLES

SAMPLE OF 497 SERVICE STATIONS

These six computer tables represent the results to the first page of the observation form regarding the stratified sample of 497 service stations across ten census metropolitan areas. Data are weighted in accordance with community size.

Sample of 497 Service Stations

INCI 85-443 OCT.1985

CITY

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH
Q 1																	
WEIGHTED SAMPLE		497	65	30	8	30	154	7	37	145	6	14	364	97	36	257	233
	IH	100	13	6	2	6	31	2	7	29	1	3	73	20	7	52	47
REAL SAMPLE		497	50	50	51	50	50	48	50	50	48	50	150	150	197	282	207
VANCOUVER	IH	100	100	0	0	0	0	0	0	0	0	0	100	0	0	52	48
	IV	13	100	0	0	0	0	0	0	0	0	0	18	0	0	13	13
CALGARY	IH	100	0	100	0	0	0	0	0	0	0	0	0	100	0	52	48
	IV	6	0	100	0	0	0	0	0	0	0	0	0	31	0	6	6
REGINA	IH	100	0	0	100	0	0	0	0	0	0	0	0	0	100	45	53
	IV	2	0	0	100	0	0	0	0	0	0	0	0	0	23	1	2
WINNIPEG	IH	100	0	0	0	100	0	0	0	0	0	0	0	100	0	44	54
	IV	6	0	0	0	100	0	0	0	0	0	0	0	31	0	5	7
TORONTO	IH	100	0	0	0	0	100	0	0	0	0	0	100	0	0	56	44
	IV	31	0	0	0	0	100	0	0	0	0	0	42	0	0	33	29
SUDBURY	IH	100	0	0	0	0	0	100	0	0	0	0	0	0	100	62	31
	IV	2	0	0	0	0	0	100	0	0	0	0	0	0	21	2	1
OTTAWA	IH	100	0	0	0	0	0	0	100	0	0	0	0	100	0	48	52
	IV	7	0	0	0	0	0	0	100	0	0	0	0	38	0	7	8
MONTREAL	IH	100	0	0	0	0	0	0	0	100	0	0	100	0	0	44	52
	IV	29	0	0	0	0	0	0	0	100	0	0	40	0	0	25	32
TROIS-RIVIERES	IH	100	0	0	0	0	0	0	0	0	100	0	0	0	100	65	33
	IV	1	0	0	0	0	0	0	0	0	100	0	0	0	16	1	1
HALIFAX	IH	100	0	0	0	0	0	0	0	0	0	100	0	0	100	100	0
	IV	3	0	0	0	0	0	0	0	0	0	100	0	0	40	6	0

INCI 85 443 OCT.1985
TYPE OF STATION

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-999K	100-499K	FULL SERV	SELF BOTH
U.2																	
WEIGHTED SAMPLE		497	65	30	8	30	154	7	37	145	6	14	364	97	36	257	233
	%H	100	13	6	2	6	31	1	7	29	1	3	73	20	7	52	47
REAL SAMPLE		497	50	50	51	50	50	48	50	50	48	50	150	150	197	282	207
FULL SERVE	%H	100	13	6	1	5	33	2	7	25	1	6	71	18	10	100	0
	%V	52	52	52	45	44	56	62	46	44	65	100	50	48	74	100	0
SELF SERVE	%H	100	14	6	2	7	28	1	9	32	1	0	74	22	4	0	100
	%V	44	46	42	51	52	40	31	52	48	33	0	44	49	24	0	93
BOTH	%H	100	8	11	1	4	39	0	0	37	0	0	84	15	1	0	100
	%V	3	2	6	2	2	4	0	0	4	0	0	4	2	0	0	7
N.A.	%H	100	0	0	2	8	0	7	0	81	2	0	81	8	11	0	0
	%V	1	0	0	2	2	0	6	0	4	2	0	2	1	2	0	0

INCI 85-443 OCT.1985
SERVICE-STATION BRAND NAME

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH
U.S	WEIGHTED SAMPLE	497	65	50	8	30	154	7	37	145	6	14	364	97	36	257	233
	%H	100	13	6	2	6	31	2	7	29	1	3	73	20	7	52	47
	REAL SAMPLE	497	50	50	51	50	50	48	50	50	48	50	150	150	197	282	207
ESSO	%H	100	17	8	2	7	28	1	4	30	1	3	74	19	7	40	57
	%V	16	20	20	16	18	14	15	8	16	8	18	16	15	15	12	19
GULF	%H	100	15	7	2	5	31	2	6	29	1	2	75	18	6	30	69
	%V	12	14	14	14	10	12	12	10	12	10	8	12	11	11	7	18
PETRO-CANADA	%H	100	7	6	1	7	29	2	14	28	2	4	65	27	9	41	54
	%V	10	6	10	4	12	10	12	20	10	15	16	9	14	12	8	12
SHELL	%H	100	15	5	1	6	34	1	6	29	1	2	78	17	5	45	55
	%V	18	20	14	12	18	20	17	14	18	10	12	19	15	13	16	21
SUNOCO	%H	100	0	0	0	0	58	0	23	18	0	0	77	23	0	86	14
	%V	3	0	0	0	0	6	0	10	2	0	0	3	4	0	5	1
TEXACO	%H	100	8	4	2	4	41	1	4	32	1	3	81	12	7	38	62
	%V	16	10	12	16	12	22	12	8	18	8	18	18	10	15	12	22
ULTRAMAR	%H	100	0	0	0	0	0	0	0	92	8	0	92	0	8	100	0
	%V	1	0	0	0	0	0	0	0	2	4	0	1	0	1	1	0
OTHER	%H	100	13	8	3	7	20	2	9	27	2	4	65	24	11	88	11
	%V	22	30	30	37	26	14	27	26	20	42	28	19	27	32	37	5
CANADIAN TIRE	%H	100	0	0	2	13	33	3	16	31	1	0	65	29	7	40	60
	%V	2	0	0	2	4	2	4	4	2	2	0	2	3	2	1	2

INCI 85-443 OCT.1985
GASOLINE OFFERED: * LEADED GAS *

			TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE	
				VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	HTI	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH
U.S.A	WEIGHTED SAMPLE		497	65	30	8	30	154	7	37	145	6	14	364	97	36	257	233
		%H	100	13	6	2	6	31	2	7	29	1	3	73	20	7	52	47
	REAL SAMPLE		497	50	50	51	50	50	48	50	50	48	50	150	150	197	282	207
YES		%H	100	13	6	2	6	31	2	7	29	1	3	73	20	7	52	47
		%V	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
NO		%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INCI 85-443 OCT.1985
GASOLINE OFFERED: "UNLEADED GAS"

			TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE	
				VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	I-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH
U.S.B																		
	WEIGHTED SAMPLE		497	65	30	8	30	154	7	37	145	6	14	364	97	36	257	233
		IH	100	13	6	2	6	31	2	7	29	1	3	73	20	7	52	47
	REAL SAMPLE		497	50	50	51	50	50	48	50	50	48	50	150	150	197	202	207
YES		IH	100	13	6	2	6	31	1	7	29	1	3	73	20	7	52	47
		IV	100	100	100	100	100	100	98	100	100	94	100	100	100	99	100	100
NO		IH	100	0	0	0	0	0	29	0	0	71	0	0	0	100	100	0
		IV	0	0	0	0	0	0	2	0	0	6	0	0	0	1	0	0

INCI 85-443 OCT 1985
INCIDENCE OF NOZZLE SUBSTITUTION ON LEADED GASOLINE PUMPS ONLY

			TOTAL	CITY										COMMUNITY SIZE			STAT TYPE	
				VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-999K	100-499K	FULL SERV	SELF BOTH
U.C																		
	WEIGHTED SAMPLE		497	65	30	8	30	154	7	37	145	6	14	364	97	36	257	233
		IH	100	13	6	2	6	31	2	7	29	1	3	73	20	7	52	47
	REAL SAMPLE		497	50	50	51	50	50	48	50	50	48	50	150	150	197	262	207
YES		IH	100	4	0	10	7	37	0	4	35	0	1	77	12	11	63	37
		IV	7	2	0	39	8	8	2	4	8	0	2	7	4	10	8	5
NO		IH	100	14	7	1	6	30	2	8	29	1	3	73	20	7	51	48
		IV	93	98	100	61	92	92	98	96	92	100	98	93	96	90	92	95

SAMPLE OF 4,311 VEHICULAR OBSERVATIONS

The following computer tables represent the results to the second page of the observation form regarding the stratified sample of 4,311 vehicular observations across ten census metropolitan areas. Data are weighted in accordance with community size.

INCI 85-443 DEC.1985 "OPTIMA-VEHICLES" Sample of 4311 Vehicular Observations Distribution by City of

CITY

Total Vehicular Observations

	TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
		VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
4.1																		
WEIGHTED SAMPLE	4311	565	263	73	259	1332	65	319	1259	52	125	3156	841	315	1484	2742	1107	3188
	%H 100	13	6	2	6	31	1	7	29	1	3	73	19	7	34	64	26	74
REAL SAMPLE	4311	433	432	430	432	433	429	432	430	430	430	1296	1296	1719	1616	2666	1169	3128
VANCOUVER	%H 100	100	0	0	0	0	0	0	0	0	0	100	0	0	42	58	32	67
	%V 13	100	0	0	0	0	0	0	0	0	0	18	0	0	16	12	16	12
CALGARY	%H 100	0	100	0	0	0	0	0	0	0	0	0	100	0	11	89	30	70
	%V 6	0	100	0	0	0	0	0	0	0	0	0	31	0	2	9	7	6
REGINA	%H 100	0	0	100	0	0	0	0	0	0	0	0	0	100	60	40	25	75
	%V 2	0	0	100	0	0	0	0	0	0	0	0	0	23	3	1	2	2
WINNIPEG	%H 100	0	0	0	100	0	0	0	0	0	0	0	100	0	33	67	43	57
	%V 6	0	0	0	100	0	0	0	0	0	0	0	31	0	6	6	10	5
TORONTO	%H 100	0	0	0	0	100	0	0	0	0	0	100	0	0	46	54	24	76
	%V 31	0	0	0	0	100	0	0	0	0	0	42	0	0	42	26	29	32
SUDBURY	%H 100	0	0	0	0	0	100	0	0	0	0	0	0	100	0	100	25	74
	%V 1	0	0	0	0	0	100	0	0	0	0	0	0	21	0	2	1	1
OTTAWA	%H 100	0	0	0	0	0	0	100	0	0	0	0	100	0	22	78	20	80
	%V 7	0	0	0	0	0	0	100	0	0	0	0	38	0	5	9	6	8
MONTREAL	%H 100	0	0	0	0	0	0	0	100	0	0	100	0	0	20	73	22	77
	%V 29	0	0	0	0	0	0	0	100	0	0	40	0	0	17	34	25	31
TROIS-RIVIERES	%H 100	0	0	0	0	0	0	0	0	100	0	0	0	100	40	60	25	75
	%V 1	0	0	0	0	0	0	0	0	100	0	0	0	16	1	1	1	1
HALIFAX	%H 100	0	0	0	0	0	0	0	0	0	100	0	0	100	100	0	26	74
	%V 3	0	0	0	0	0	0	0	0	0	100	0	0	40	8	0	3	3

CITY

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL YES L-U
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	98 LEAD	UNLE	
Q.1																						
WEIGHTED SAMPLE		2163	1231	932	1601	1148	453	348	1830	724	643	47	121	205	235	106	397	3265	1042	1144	3166	378
	IH	50	29	22	37	27	11	8	42	17	15	1	3	5	5	2	9	76	24	27	73	9
REAL SAMPLE		2012	1103	909	1672	1160	512	445	1873	809	689	54	110	178	181	91	322	3438	865	1371	2938	474
VANCOUVER	IH	57	32	25	33	26	7	2	38	18	12	0	3	8	8	3	10	68	32	36	64	9
	IV	15	15	15	12	13	9	3	12	14	10	6	14	22	19	17	15	12	17	18	11	13
CALGARY	IH	48	31	17	36	25	12	9	42	21	15	1	4	5	2	2	9	79	20	40	60	14
	IV	6	7	5	6	6	7	7	6	8	6	4	9	7	2	4	6	6	5	9	5	10
REGINA	IH	29	14	15	46	30	16	19	49	27	13	0	0	5	2	0	3	90	10	47	53	27
	IV	1	1	1	2	2	3	4	2	3	1	1	0	2	1	0	1	2	1	3	1	5
WINNIPEG	IH	42	19	23	40	26	14	15	41	21	22	2	2	2	3	3	4	86	14	48	52	10
	IV	5	4	6	6	6	8	11	6	8	9	12	5	2	3	6	3	7	3	11	4	7
TORONTO	IH	45	25	20	39	26	12	10	45	16	12	1	2	4	7	2	10	75	25	25	75	9
	IV	28	27	28	32	31	37	37	33	29	25	20	25	26	41	29	35	31	32	30	31	31
SUDBURY	IH	31	14	17	49	28	21	18	48	19	20	1	2	2	2	1	4	89	11	28	72	6
	IV	1	1	1	2	2	3	3	2	2	2	2	1	1	1	1	1	2	1	2	1	1
OTTAWA	IH	54	33	21	34	25	9	9	45	15	12	2	3	4	3	4	11	75	25	22	78	7
	IV	8	9	7	7	7	7	8	8	7	6	13	9	6	4	12	9	7	8	6	8	6
MONTREAL	IH	56	33	23	37	28	9	6	41	15	18	1	3	5	5	2	9	76	24	16	84	7
	IV	32	34	31	29	31	24	22	28	26	35	38	34	33	26	28	29	29	30	18	33	22
TROIS-RIVIERES	IH	53	27	26	37	28	9	7	47	14	16	2	3	4	5	2	7	79	21	30	70	14
	IV	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2
HALIFAX	IH	51	27	25	38	27	11	8	37	21	22	1	2	3	6	2	6	82	18	26	74	8
	IV	3	3	3	3	3	3	3	3	4	4	4	2	2	3	2	2	3	2	3	3	3

[illegible] MEC.1985 "OPTIMA VEHICLES"

Distribution of

[illegible] RESIDENTIAL ONLY

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	HIL	T.B.	HALI	1000 KM	500-600K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
W.I																			
	WEIGHTED SAMPLE	378	50	37	19	25	117	4	24	85	7	10	251	85	41	134	234	0	378
		%H 100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
	REAL SAMPLE	474	58	60	114	42	38	26	32	29	59	36	105	134	235	202	269	0	474
VANCOUVER		%H 100	100	0	0	0	0	0	0	0	0	0	100	0	0	55	45	0	100
		%V 13	100	0	0	0	0	0	0	0	0	0	20	0	0	20	9	0	13
CALGARY		%H 100	0	100	0	0	0	0	0	0	0	0	0	100	0	7	93	0	100
		%V 10	0	100	0	0	0	0	0	0	0	0	0	43	0	2	15	0	10
REGINA		%H 100	0	0	100	0	0	0	0	0	0	0	0	0	100	62	38	0	100
		%V 5	0	0	100	0	0	0	0	0	0	0	0	0	37	9	5	0	5
WINNIPEG		%H 100	0	0	0	100	0	0	0	0	0	0	0	100	0	33	67	0	100
		%V 7	0	0	0	100	0	0	0	0	0	0	0	29	0	6	7	0	7
TORONTO		%H 100	0	0	0	0	100	0	0	0	0	0	100	0	0	42	58	0	100
		%V 31	0	0	0	0	100	0	0	0	0	0	47	0	0	37	29	0	31
SUDBURY		%H 100	0	0	0	0	0	100	0	0	0	0	0	0	100	0	100	0	100
		%V 1	0	0	0	0	0	100	0	0	0	0	0	0	10	0	2	0	1
OTTAWA		%H 100	0	0	0	0	0	0	100	0	0	0	0	100	0	28	72	0	100
		%V 6	0	0	0	0	0	0	100	0	0	0	0	28	0	5	7	0	6
MONTREAL		%H 100	0	0	0	0	0	0	0	100	0	0	100	0	0	17	72	0	100
		%V 22	0	0	0	0	0	0	0	100	0	0	34	0	0	11	26	0	22
HULL-GATINEAU		%H 100	0	0	0	0	0	0	0	0	100	0	0	0	100	44	56	0	100
		%V 2	0	0	0	0	0	0	0	0	100	0	0	0	17	2	2	0	2
HALIFAX		%H 100	0	0	0	0	0	0	0	0	0	100	0	0	100	100	0	0	100
		%V 3	0	0	0	0	0	0	0	0	0	100	0	0	26	6	0	0	3

[illegible] 445 MEL 1965 "OTTAWA VEHICLES"

[illegible]

[illegible]

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MISFUELLED-D
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	LUXURY	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	GAS	UNLE	
WEIGHTED SAMPLE		118	84	34	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
REAL SAMPLE		127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
VANCOUVER	%H	50	24	26	39	29	11	3	66	16	5	0	0	11	0	0	3	87	13	100	0	100
	%V	21	14	38	13	17	9	1	15	7	18	0	0	48	0	0	8	13	20	13	0	13
CALGARY	%H	28	22	7	52	27	25	18	58	28	3	0	7	3	0	0	0	90	10	100	0	100
	%V	9	9	7	13	11	15	7	10	10	9	0	75	11	0	0	0	10	11	10	0	10
REGINA	%H	14	6	8	46	20	20	32	68	27	4	0	0	0	1	0	1	97	2	100	0	100
	%V	2	1	5	6	6	6	7	6	5	5	0	0	0	100	0	1	6	1	5	0	5
WINNIPEG	%H	26	12	14	51	24	7	40	40	45	12	0	0	0	0	0	2	95	2	100	0	100
	%V	6	4	11	5	7	3	11	5	10	21	0	0	0	0	0	4	7	2	7	0	7
TORONTO	%H	26	21	5	54	21	11	32	50	34	3	0	0	3	0	0	11	87	13	100	0	100
	%V	26	29	16	27	32	20	39	26	36	22	0	0	29	0	0	76	30	46	31	0	31
SUDBURY	%H	12	4	8	27	15	12	54	65	15	8	0	8	4	0	0	0	88	12	100	0	100
	%V	0	0	1	1	1	1	2	1	1	2	0	9	1	0	0	0	1	1	1	0	1
OTTAWA	%H	34	28	6	34	12	22	28	59	22	6	3	0	3	0	0	6	91	9	100	0	100
	%V	7	8	4	6	3	8	7	6	5	10	100	0	7	0	0	9	6	7	6	0	6
MONTREAL	%H	54	31	3	41	17	24	24	69	28	0	0	0	0	0	3	0	97	3	100	0	100
	%V	25	31	9	24	17	33	22	26	22	0	0	0	0	0	100	0	24	9	22	0	22
TROIS-RIVIERES	%H	54	27	7	46	36	10	20	68	19	2	0	3	5	0	0	3	88	12	100	0	100
	%V	2	2	1	2	3	1	2	2	1	1	0	7	3	0	0	1	2	3	2	0	2
HALIFAX	%H	26	8	19	39	19	19	25	64	17	17	0	3	0	0	0	0	97	3	100	0	100
	%V	2	1	6	3	2	3	3	3	2	12	0	9	0	0	0	0	3	1	3	0	3

MANUFACTURER

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		4311	565	263	73	259	1332	65	319	1259	52	125	3156	841	315	1484	2742	1107	3188
	IH	100	13	6	2	6	31	1	7	29	1	3	73	19	7	34	64	26	74
REAL SAMPLE		4311	433	432	430	432	433	429	432	430	430	430	1296	1296	1719	1616	2666	1169	3128
AMERICAN MOTORS	IH	100	6	4	1	12	20	2	13	38	2	4	63	28	9	36	64	60	40
	IV	1	0	1	0	2	1	1	2	1	2	1	1	2	1	1	1	3	1
CHRYSLER	IH	100	10	6	1	9	25	2	6	35	1	4	71	21	9	34	64	62	37
	IV	15	12	15	13	22	12	20	12	18	16	22	14	16	18	15	15	36	8
FORD	IH	100	14	8	3	8	29	2	7	26	1	4	69	22	9	32	67	11	89
	IV	17	18	21	27	21	16	19	15	15	14	21	16	19	21	15	18	7	20
GENERAL MOTORS	IH	100	12	6	2	6	33	2	8	28	1	3	73	20	8	35	63	5	95
	IV	42	38	42	49	41	45	48	45	41	47	37	42	43	44	44	42	8	55
DATSUN	IH	100	14	9	0	5	25	1	9	34	1	2	73	22	5	27	70	44	56
	IV	3	3	4	0	2	2	2	3	3	3	2	3	3	2	2	3	5	2
HONDA	IH	100	19	2	1	3	41	1	4	26	1	3	86	9	5	34	66	100	0
	IV	5	8	2	2	3	7	2	3	5	5	6	6	3	4	5	6	21	0
TOYOTA	IH	100	22	7	2	2	26	1	6	33	1	2	80	15	5	33	64	10	90
	IV	5	8	5	5	2	4	2	4	5	4	3	5	4	3	5	5	2	6
VOLKSWAGEN	IH	100	17	4	0	6	29	1	12	28	1	2	74	22	4	41	56	84	16
	IV	2	3	2	0	3	2	1	4	2	2	2	2	3	1	3	2	8	1
OTHER	IH	100	15	6	1	3	35	1	9	29	1	2	78	17	4	38	58	30	70
	IV	9	10	9	3	4	10	4	11	9	7	6	10	8	5	10	8	11	9

INFI 85-443 DEC.1985 "OPTIMA VEHICLES"
MANUFACTURER

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	GA. LEAD	UNLE	YES L-U
WEIGHTED SAMPLE		2163	1231	932	1601	1148	453	348	1830	724	643	47	121	205	235	106	397	3265	1042	1144	3166	378
	IH	50	29	22	37	27	11	8	42	17	15	1	3	5	5	2	9	76	24	27	73	9
REAL SAMPLE		2012	1103	909	1672	1160	512	445	1873	809	689	54	110	178	181	91	322	3438	865	1371	2938	474
AMERICAN MOTORS	IH	85	59	26	1	0	0	4	0	0	0	100	0	0	0	0	0	100	0	34	66	2
	IV	2	2	1	0	0	0	1	0	0	0	100	0	0	0	0	0	1	0	1	1	0
CHRYSLER	IH	41	10	30	46	40	6	10	0	0	100	0	0	0	0	0	0	100	0	40	60	2
	IV	12	5	21	19	23	8	18	0	0	100	0	0	0	0	0	0	20	0	23	12	4
FORD	IH	49	19	29	31	20	10	16	0	100	0	0	0	0	0	0	0	100	0	25	75	15
	IV	16	11	23	14	13	17	34	0	100	0	0	0	0	0	0	0	22	0	16	17	28
GENERAL MOTORS	IH	32	16	16	57	39	18	7	100	0	0	0	0	0	0	0	0	100	0	17	83	12
	IV	27	23	32	66	62	75	36	100	0	0	0	0	0	0	0	0	56	0	27	48	59
DATSUN	IH	82	69	13	0	0	0	8	0	0	0	0	100	0	0	0	0	8	92	31	69	3
	IV	5	7	2	0	0	0	3	0	0	0	0	100	0	0	0	0	0	11	3	3	1
HONDA	IH	98	98	0	0	0	0	0	0	0	0	0	0	0	100	0	0	1	99	56	44	0
	IV	11	19	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	22	11	3	0
TOYOTA	IH	91	51	40	0	0	0	3	0	0	0	0	0	100	0	0	0	0	100	15	85	5
	IV	9	9	9	0	0	0	2	0	0	0	0	0	100	0	0	0	0	20	3	6	3
VOLKSWAGEN	IH	93	76	17	0	0	0	6	0	0	0	0	0	0	0	100	0	0	100	56	44	3
	IV	5	7	2	0	0	0	2	0	0	0	0	0	0	0	100	0	0	10	5	1	1
OTHER	IH	77	53	24	8	7	1	4	0	0	0	0	0	0	0	0	100	3	97	29	71	4
	IV	14	17	10	2	3	1	5	0	0	0	0	0	0	0	0	100	0	37	10	9	4

[illegible] DEC.1965 "OPTIMA VEHICLES"
[illegible]

[illegible] MISCELLANEOUS ONLY

		TOTAL	CITY										COMMUNITY SIZE			STATISTICS		DESIGNA. FUEL	
			VANC	CALG	EDMT	WINN	TORO	SUDB	OTTA	MTL	F-R.	HALI	1000 PP	500-999K	100-499K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		3??	50	32	19	25	117	4	21	85	7	10	251	85	41	134	234	0	3??
	%H	100	15	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
REAL SAMPLE		474	38	60	114	42	38	26	52	29	59	56	105	134	235	202	269	0	471
AMERICAN MOTORS	%H	100	0	0	0	0	0	0	100	0	0	0	0	100	0	0	100	0	100
	%V	0	0	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0
CHRYSLER	%H	100	13	9	5	21	27	2	10	0	1	12	40	40	20	58	42	0	100
	%V	4	5	3	4	12	3	8	6	0	2	17	2	7	7	6	3	0	4
FORD	%H	100	7	10	5	10	38	1	5	22	1	2	67	25	8	20	77	0	100
	%V	28	14	26	27	43	34	15	22	28	19	17	28	31	22	16	35	0	28
GENERAL MOTORS	%H	100	15	10	6	5	26	1	6	26	2	3	67	20	12	43	54	0	100
	%V	59	66	58	68	40	50	65	59	69	68	64	60	53	66	71	52	0	59
DATSUN	%H	100	0	75	0	0	0	9	0	0	7	9	0	75	25	13	87	0	100
	%V	1	0	7	0	0	0	8	0	0	3	3	0	3	2	0	1	0	1
HONDA	%H	100	0	0	100	0	0	0	0	0	0	0	0	0	100	100	0	0	100
	%V	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOYOTA	%H	100	48	11	0	6	29	1	7	0	5	0	77	18	5	24	76	0	100
	%V	3	11	3	0	0	3	4	3	0	5	0	3	2	1	2	3	0	3
VOLKSWAGEN	%H	100	0	0	0	0	0	0	0	100	0	0	100	0	0	0	100	0	100
	%V	1	0	0	0	0	0	0	0	3	0	0	1	0	0	0	1	0	1
OTHER	%H	100	8	0	1	4	76	0	9	0	1	0	85	13	3	37	63	0	100
	%V	4	3	0	1	2	11	0	6	0	3	0	5	2	1	4	4	0	4

ID: [illegible] DEC.1985 "[illegible] VEHICLES"
MANUFACTURER

FILTER: [illegible]

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUNCTIONING (YES 1 - 0)
		SMALL	SUB-COMP	COMPACT	LARGE	MID SIZE	FULL SIZE	INTERC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	GAS	DSLD	
WEIGHTED SAMPLE		116	84	34	147	[illegible]	61	95	222	106	14	1	3	11	0	3	16	344	54	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
REAL SAMPLE		127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
AMERICAN MOTORS	%H	100	100	0	0	0	0	0	0	0	0	100	0	0	0	0	0	100	0	100	0	100
	%V	1	1	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0
CHRYSLER	%H	51	22	10	16	12	4	49	0	0	100	0	0	0	0	0	0	100	0	100	0	100
	%V	4	4	4	2	2	1	7	0	0	100	0	0	0	0	0	0	4	0	4	0	4
FORD	%H	29	21	9	21	20	2	49	0	100	0	0	0	0	0	0	0	100	0	100	0	100
	%V	26	26	27	15	25	3	56	0	100	0	0	0	0	0	0	0	31	0	28	0	28
GENERAL MOTORS	%H	23	15	8	55	28	27	15	100	0	0	0	0	0	0	0	0	100	0	100	0	100
	%V	43	38	55	83	74	96	36	100	0	0	0	0	0	0	0	0	65	0	59	0	59
DATSUN	%H	68	68	0	0	0	0	32	0	0	0	0	100	0	0	0	0	0	100	100	0	100
	%V	2	3	0	0	0	0	1	0	0	0	0	100	0	0	0	0	0	10	1	0	1
HONDA	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	100	100	0	100
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	1	0	0	0
TOYOTA	%H	86	42	44	0	0	0	1	0	0	0	0	0	100	0	0	0	0	100	100	0	100
	%V	8	5	14	0	0	0	0	0	0	0	0	0	100	0	0	0	0	32	3	0	3
VOLKSWAGEN	%H	100	100	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	100	0	100
	%V	2	3	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	9	1	0	1
OTHER	%H	99	99	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	100	0	100
	%V	13	19	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	48	4	0	4

ORIGIN

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		4311	565	263	73	259	1332	65	319	1259	52	125	3156	841	315	1484	2742	1107	3188
	IH	100	13	6	2	6	31	1	7	29	1	3	73	19	7	34	64	26	74
REAL SAMPLE		4311	433	432	430	432	433	429	432	430	430	430	1296	1296	1719	1616	2666	1169	3128
DOMESTIC	IH	100	12	6	2	7	31	2	7	29	1	3	71	20	8	34	64	18	81
	IV	76	68	79	90	86	75	89	75	76	79	82	74	79	85	75	76	54	83
IMPORT	IH	100	17	5	1	3	32	1	8	30	1	2	79	16	5	36	62	49	51
	IV	24	32	20	10	14	25	11	25	24	21	18	26	20	15	25	23	46	17
NO ANSWER	IH	100	100	0	0	0	0	0	0	0	0	0	100	0	0	0	100	0	0
	IV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	98 LEAD	UNLE	YES L-U
WEIGHTED SAMPLE		2163	1231	932	1601	1148	453	348	1830	724	643	47	121	205	235	106	397	3265	1042	1144	3166	378
	IH	50	29	22	37	27	11	8	42	17	15	1	3	5	5	2	9	76	24	27	73	9
REAL SAMPLE		2012	1103	909	1672	1160	512	445	1873	809	689	54	110	178	181	91	322	3438	865	1371	2938	474
DOMESTIC	IH	38	16	22	48	34	14	10	56	22	20	1	0	0	0	0	0	100	0	24	76	11
	IV	58	43	78	98	97	99	91	100	100	100	100	8	0	1	0	3	100	0	67	79	91
IMPORT	IH	87	60	20	3	3	0	3	0	0	0	0	11	20	22	10	37	0	100	35	65	3
	IV	42	57	22	2	3	1	9	0	0	0	0	92	100	99	100	97	0	100	32	21	9
NO ANSWER	IH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	100	0	0
	IV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[illegible] DEC.1965 "[illegible] VEHICLES"
ORIGIN

FILTER: [illegible] ONLY

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	EDMT	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-1000K	100-500K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		378	50	37	19	25	117	4	24	85	7	10	251	85	41	134	234	0	378
	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
REAL SAMPLE		474	58	60	114	42	58	26	32	29	59	36	105	134	235	202	269	0	474
DOMESTIC	%H	100	13	10	6	7	30	1	6	24	2	3	66	23	11	36	61	0	100
	%V	91	87	90	97	95	87	88	91	97	88	97	90	92	95	93	89	0	91
IMPORT	%H	100	20	11	1	2	46	1	7	9	3	1	75	19	6	28	72	0	100
	%V	9	13	10	2	2	13	12	9	3	12	3	10	8	5	7	10	0	9
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	US LEAD	UNLE	YES L-U
WEIGHTED SAMPLE		118	84	54	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
REAL SAMPLE		127	88	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
DOMESTIC	%H	25	17	9	43	25	18	27	65	31	4	0	0	0	0	0	0	100	0	100	0	100
	%V	74	69	86	100	100	100	99	100	100	100	100	0	0	0	0	0	100	0	91	0	91
IMPORT	%H	91	77	14	0	0	0	4	0	0	0	0	10	32	1	9	48	0	100	100	0	100
	%V	26	30	14	0	0	0	1	0	0	0	0	100	100	100	100	100	0	100	9	0	9
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		1042	181	54	7	35	335	7	81	307	11	23	824	170	47	373	642	506	535
	%H	100	17	5	1	3	32	1	8	30	1	2	79	16	5	36	62	49	51
REAL SAMPLE		865	139	88	41	59	109	47	110	105	89	78	353	257	255	335	521	434	429
JAPANESE	%H	100	18	5	1	3	34	1	6	30	1	2	81	14	4	33	64	46	54
	%V	66	67	69	73	61	70	68	49	67	64	62	68	58	65	62	69	62	70
EUROPEAN	%H	100	18	5	1	4	30	1	11	28	1	3	75	20	5	40	57	49	51
	%V	30	30	28	24	36	28	26	43	29	30	35	29	37	31	34	28	30	30
OTHER	%H	100	13	3	0	3	23	1	17	37	1	2	73	23	4	42	58	100	0
	%V	4	3	2	2	3	3	6	8	5	2	4	4	5	4	5	4	8	0
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED 08		MIS-FUEL YES L-U
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	LEAD	UNLE	
WEIGHTED SAMPLE		911	704	207	32	29	3	32	0	3	0	0	112	205	232	106	384	0	1042	370	672	33
	%H	87	68	20	3	3	0	3	0	0	0	0	11	20	22	10	37	0	100	35	65	3
REAL SAMPLE		751	578	173	30	29	1	36	0	2	0	0	106	178	179	91	309	0	865	358	507	34
JAPANESE	%H	89	72	17	0	0	0	3	0	0	0	0	16	29	33	2	20	0	100	32	68	4
	%V	68	70	58	10	11	0	75	0	0	0	0	100	98	100	11	35	0	66	59	70	77
EUROPEAN	%H	83	58	25	9	8	1	2	0	0	0	0	0	1	0	30	68	0	100	39	61	2
	%V	28	26	37	86	85	100	21	0	0	0	0	0	2	0	89	55	0	30	33	28	23
OTHER	%H	94	70	24	3	3	0	3	0	8	0	0	0	0	0	0	92	0	100	75	25	0
	%V	4	4	5	4	4	0	3	0	96	0	0	0	0	0	0	10	0	4	8	1	0
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Part 33 of 41: DEC.1965 "DRIVING VEHICLES"
TOTAL

CONTINUED

		TOTAL	CITY										COMMUNITY SIZE			STAT. TYPE		DESIGNA. FUEL	
			VANC	CALG	EDMN	WINN	TORO	SUDB	OTTA	MTL	F'K.	HALI	1000 KP	SUB-500K	100 400K	FUEL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		33	7	4	0	1	15	0	2	3	1	0	25	6	2	9	24	0	33
	%H	100	20	11	1	2	46	1	7	9	3	1	75	19	6	28	72	0	100
REAL SAMPLE		34	5	6	2	1	5	3	3	1	7	1	11	10	13	11	23	0	34
JAPANESE	%H	100	25	14	1	0	48	2	6	0	2	1	73	20	7	18	82	0	100
	%V	77	100	100	100	0	80	100	67	0	71	100	76	79	88	51	87	0	77
EUROPEAN	%H	100	0	0	0	3	41	0	10	39	3	0	79	18	3	60	40	0	100
	%V	23	0	0	0	100	20	0	33	100	29	0	24	21	12	49	13	0	23
OTHER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL	
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	UNLEAD	UNLE	YES L-U	
WEIGHTED SAMPLE		30	26	5	0	0	0	1	0	0	0	0	3	11	0	3	16	0	33	33	0	33	
	%H	91	77	14	0	0	0	4	0	0	0	0	10	32	1	9	48	0	100	100	0	100	
REAL SAMPLE		27	21	6	0	0	0	4	0	0	0	0	9	12	1	1	11	0	34	34	0	34	
JAPANESE	%H	89	70	19	0	0	0	5	0	0	0	0	13	42	1	0	45	0	100	100	0	100	
	%V	75	70	100	0	0	0	100	0	0	0	0	100	100	100	0	71	0	77	77	0	77	
EUROPEAN	%H	100	100	0	0	0	0	0	0	0	0	0	0	0	0	39	61	0	100	100	0	100	
	%V	25	30	0	0	0	0	0	0	0	0	0	0	0	0	100	29	0	23	23	0	23	
OTHER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

INCT 85-443 DEC.1985 "OPTIMA-VEHICLES"
SIZE CLASS OF VEHICLE

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		4311	565	263	73	259	1332	65	319	1259	52	125	3156	841	315	1484	2742	1107	3188
	%H	100	13	6	2	6	31	1	7	29	1	3	73	19	7	34	64	26	74
REAL SAMPLE		4311	433	432	430	432	433	429	432	430	430	430	1296	1296	1719	1616	2666	1169	3128
SUB COMPACT	%H	100	15	7	1	4	27	1	9	34	1	3	75	19	5	31	67	38	62
	%V	29	32	31	14	19	25	14	33	33	27	27	29	28	21	26	30	42	24
COMPACT	%H	100	15	5	1	6	28	1	7	31	1	3	75	18	7	37	60	22	78
	%V	22	25	17	15	23	20	17	21	23	26	25	22	20	21	23	20	19	23
MID-SIZE	%H	100	13	6	2	6	31	2	7	31	1	3	74	18	8	33	65	22	78
	%V	27	26	25	30	26	26	28	25	28	28	27	27	25	28	26	27	23	28
FULL SIZE	%H	100	9	7	3	8	37	3	7	24	1	3	69	21	9	40	60	9	90
	%V	11	7	12	16	14	12	21	9	9	9	11	10	11	14	12	10	4	13
TRUCK/VAN	%H	100	3	7	4	11	37	3	8	22	1	3	62	26	11	31	68	22	78
	%V	8	2	9	19	15	10	18	9	6	7	8	7	11	13	7	9	7	9
OTHER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ANSWER	%H	100	21	8	2	5	47	1	5	10	1	1	78	17	5	48	50	29	62
	%V	4	7	6	6	3	6	2	3	1	3	2	5	4	3	6	3	5	4

INCT 85-443 DEC 1985 "OPTIMA-VEHICLES"
SIZE CLASS OF VEHICLE

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL YES L-U
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	98 LEAD	UNLE	
WEIGHTED SAMPLE		2163	1231	932	1601	1148	453	348	1830	724	643	47	121	205	235	106	397	3265	1042	1144	3166	378
	ZH	50	29	22	37	27	11	8	42	17	15	1	3	5	5	2	9	76	24	27	73	9
REAL SAMPLE		2012	1103	909	1672	1160	512	445	1873	809	689	54	110	178	181	91	322	3438	865	1371	2938	474
SUB COMPACT	ZH	100	100	0	0	0	0	0	23	11	5	2	7	9	19	7	17	43	57	31	69	7
	ZV	57	100	0	0	0	0	0	16	19	10	59	69	51	98	76	53	16	68	34	27	22
COMPACT	ZH	100	0	100	0	0	0	0	32	23	21	1	2	9	0	2	10	78	22	23	77	4
	ZV	43	0	100	0	0	0	0	16	29	30	26	13	40	0	17	24	22	20	18	23	9
MID-SIZE	ZH	0	0	0	100	100	0	0	62	13	23	0	0	0	0	0	3	97	3	18	82	7
	ZV	0	0	0	72	100	0	0	39	20	40	0	0	0	0	0	7	34	3	18	30	23
FULL SIZE	ZH	0	0	0	100	0	100	0	75	17	8	0	0	0	0	0	1	99	1	21	78	14
	ZV	0	0	0	28	0	100	0	18	10	6	0	0	0	0	0	1	14	0	9	11	16
TRUCK/VAN	ZH	0	0	0	0	0	0	100	36	34	18	1	3	2	0	2	5	91	9	45	55	27
	ZV	0	0	0	0	0	0	100	7	16	10	4	8	3	0	6	4	10	3	14	6	25
OTHER	ZH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ZV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ANSWER	ZH	0	0	0	0	0	0	0	35	17	13	3	7	5	0	0	21	69	30	43	57	10
	ZV	0	0	0	0	0	0	0	3	4	4	10	10	4	0	0	10	4	5	7	3	5

[illegible] "OPTIMA VEHICLES"
SIZE CLASS OF VEHICLE

RESPONDENTS: MISFUELLERS ONLY

		TOTAL	CITY										COMMUNITY SIZE			STAT. TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		378	50	32	17	25	117	4	24	85	7	10	251	85	41	134	234	0	378
	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
REAL SAMPLE		474	58	60	114	42	38	26	32	29	59	36	105	134	235	202	269	0	474
SUB COMPACT	%H	100	14	9	1	4	29	0	8	31	2	1	74	21	5	30	63	0	100
	%V	22	24	22	6	12	21	4	26	31	27	8	25	21	10	19	23	0	22
COMPACT	%H	100	38	7	5	11	18	1	4	9	1	6	65	22	13	43	57	0	100
	%V	9	26	7	8	14	5	8	6	3	7	19	9	9	11	11	8	0	9
MID SIZE	%H	100	17	11	6	7	32	1	3	17	3	2	66	22	12	44	52	0	100
	%V	23	29	27	26	24	24	15	12	17	36	19	23	22	25	28	19	0	23
FULL SIZE	%H	100	9	15	6	3	20	1	8	33	1	3	62	26	12	35	65	0	100
	%V	16	11	25	20	7	11	12	22	24	10	19	15	19	17	16	17	0	16
TRUCK/VAN	%H	100	1	7	7	11	39	2	7	22	2	3	62	25	13	26	74	0	100
	%V	25	3	18	32	40	32	54	28	24	20	25	23	28	30	18	30	0	25
OTHER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ANSWER	%H	100	22	3	8	3	52	2	4	0	0	5	75	11	14	66	34	0	100
	%V	5	8	2	7	2	8	8	3	0	0	8	5	2	6	9	3	0	5

INCL .5 145 DEC 1985 "OTHER VEHICLES"
SIZE CLASS OF VEHICLE

CROSSTABULATIONS PAGE 1

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL YES L-U
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	GA. LEAD	UNLE	
WEIGHTED SAMPLE		116	84	34	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
REAL SAMPLE		127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
SUB COMPACT	%H	100	100	0	0	0	0	0	38	26	4	1	3	5	0	3	19	69	30	100	0	100
	%V	71	100	0	0	0	0	0	15	21	22	100	68	42	0	100	99	17	77	22	0	22
COMPACT	%H	100	0	100	0	0	0	0	55	27	4	0	0	14	0	0	0	86	14	100	0	100
	%V	29	0	100	0	0	0	0	8	9	10	0	0	44	0	0	0	9	14	9	0	9
MID SIZE	%H	0	0	0	100	100	0	0	74	25	2	0	0	0	0	0	0	100	0	100	0	100
	%V	0	0	0	58	100	0	0	28	20	12	0	0	0	0	0	0	25	0	23	0	23
FULL SIZE	%H	0	0	0	100	0	100	0	96	3	1	0	0	0	0	0	0	100	0	100	0	100
	%V	0	0	0	42	0	100	0	27	2	4	0	0	0	0	0	0	18	0	16	0	16
TRUCK/VAN	%H	0	0	0	0	0	0	100	56	36	7	0	1	0	0	0	0	99	1	100	0	100
	%V	0	0	0	0	0	0	100	15	49	49	0	52	1	0	0	0	27	4	25	0	25
OTHER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NO ANSWER	%H	0	0	0	0	0	0	0	87	0	5	0	0	7	1	0	1	91	9	100	0	100
	%V	0	0	0	0	0	0	0	7	0	4	0	0	12	100	0	1	5	5	5	0	5

SCI 85-443 DEC.1985 "OPTIMA-VEHICLES"
FUEL DESIGNATION OF VEHICLE

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-999K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		4311	565	263	73	259	1332	65	319	1259	52	125	3156	841	315	1484	2742	1107	3188
	IH	100	13	6	2	6	31	1	7	29	1	3	73	19	7	34	64	26	74
REAL SAMPLE		4311	433	432	430	432	433	429	432	430	430	430	1296	1296	1719	1616	2666	1169	3128
LEADED	IH	100	16	7	2	10	29	1	6	25	1	3	70	23	7	36	63	100	0
	IV	26	32	30	25	43	24	25	20	22	25	26	25	30	25	27	25	100	0
UNLEADED	IH	100	12	6	2	5	32	1	8	31	1	3	74	18	7	34	64	0	100
	IV	74	67	70	75	57	76	74	80	77	75	74	75	70	74	72	74	0	100

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED 08		MIS-FUEL YES
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	LEAD	UNLE	L-U
WEIGHTED SAMPLE		2163	1231	932	1601	1148	453	348	1830	724	643	47	121	205	235	106	397	3265	1042	1144	3166	378
	IH	50	29	22	37	27	11	8	42	17	15	1	3	5	5	2	9	76	24	27	73	9
REAL SAMPLE		2012	1103	909	1672	1160	512	445	1873	809	689	54	110	178	181	91	322	3438	865	1371	2938	474
LEADED	IH	61	42	19	27	23	4	7	8	7	36	3	5	2	21	8	11	54	46	68	32	0
	IV	31	38	22	18	22	9	22	5	11	62	60	44	10	100	84	30	18	49	66	11	0
UNLEADED	IH	47	24	23	41	28	13	9	55	20	8	1	2	6	0	1	9	83	17	12	88	12
	IV	69	62	78	81	78	90	78	95	89	37	40	56	90	0	16	70	81	51	33	89	100

UNIT 65 445 DEC 1985 "OPTIMA-VEHICLES"
FULL DESIGNATION OF VEHICLE

FILTER: MILEAGE=0 AND

		TOTAL	CITY										COMMUNITY SIZE			STAT. TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	HTL	T-R.	HALI	1000 KM	500-999K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		378	50	37	19	25	117	4	24	85	7	10	251	85	41	134	234	0	378
	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
REAL SAMPLE		474	36	60	114	42	38	26	52	29	59	38	105	134	235	202	269	0	474
LEADED	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNLEADED	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
	%V	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	OR LEAD	UNLE	YES L-U
WEIGHTED SAMPLE		116	84	34	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
REAL SAMPLE		127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
LEADED	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
UNLEADED	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
	%V	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100

NCI 85-443 DEC 1985 "OPTIMA-VEHICLES"
OBSERVATION OF TYPE OF GASOLINE ACTUALLY PUT INTO VEHICLE

		TOTAL	CITY										COMMUNITY SIZE			STAT. TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
U.S																			
	WEIGHTED SAMPLE	4311	565	263	73	259	1332	65	319	1259	52	125	3156	841	315	1484	2742	1107	3188
		IH 100	13	6	2	6	31	1	7	29	1	3	73	19	7	34	64	26	74
	REAL SAMPLE	4311	433	432	430	432	433	429	432	430	430	430	1296	1296	1719	1616	2666	1169	3128
LEADED		IH 100	18	9	3	11	30	2	6	18	1	3	65	26	9	37	62	66	33
		IV 27	36	40	47	48	25	28	22	16	30	26	24	35	32	28	26	68	12
UNLEADED		IH 100	11	5	1	4	31	1	8	33	1	3	76	17	7	34	64	11	89
		IV 73	64	60	53	52	75	72	78	84	70	74	76	64	68	72	74	32	68

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED 08		MIS-FUEL YES
		SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	ANC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	LEAD	UNLE	L-U
U.S																						
	WEIGHTED SAMPLE	2163	1231	932	1601	1140	453	348	1830	724	643	47	121	205	235	106	397	3265	1042	1144	3166	378
		IH 50	29	22	37	27	11	8	42	17	15	1	3	5	5	2	9	76	24	27	73	9
	REAL SAMPLE	2012	1103	909	1672	1160	512	445	1873	809	689	54	110	178	181	91	322	3438	865	1371	2938	474
LEADED		IH 52	34	18	27	18	9	14	27	16	23	1	3	3	11	5	10	67	32	100	0	33
		IV 28	31	23	19	18	21	45	17	25	40	34	31	15	56	56	29	24	35	100	0	100
UNLEADED		IH 49	27	23	41	30	11	6	48	17	12	1	3	6	3	1	9	79	21	0	100	0
		IV 72	69	77	81	82	78	55	83	75	60	66	69	85	44	44	71	76	65	0	100	0

DWG [illegible] DEC 1985 "SPRING-VEHICLES"
"OBSERVATION OF TYPE OF GASOLINE ACTUALLY PUT INTO VEHICLE

FILTER MILEAGE: [illegible]

		TOTAL	BODY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. TORS	
			VANC	CARG	REGI	WINN	FORD	SUBB	OTTA	MIL	I-R.	HALF	1000 EX	500-999K	100-499K	FUEL SERV	SELF BOTH	LEAD	UNLE
U.S.																			
	WEIGHTED SAMPLE	378	50	37	19	25	117	4	24	85	7	10	251	85	41	134	234	0	378
	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
	REAL SAMPLE	474	58	60	114	42	38	26	52	29	59	56	105	134	235	202	269	0	474
LEADED	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
	%V	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100
UNLEADED	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		SIZE CLASS							MANUFACTURER								ORIGIN		FUEL USED		MIS-FUEL
		SMAL	SUB COMP	COMP	LARG	MID SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	GE. LEAD	UNLE	YES L-U
U.S.																					
	WEIGHTED SAMPLE	118	84	34	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
	REAL SAMPLE	127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
LEADED	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
	%V	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	0	100
UNLEADED	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 35 445 DEC 1985 "OPTIMA VEHICLES"
MISFUELLING

TABLE: MISFUELLERS ONLY

		TOTAL	CITY: VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	MTL	T-B.	HALI	COMMUNITY SIZE: 1000 K+	500-000K	100-400K	STAT. TYPE: FULL SERV	SELF BOTH	DESIGNA. FUEL: LEAD	UNLE
U.*																			
WEIGHTED SAMPLE		378	50	37	19	25	117	4	24	85	7	10	251	85	41	134	234	0	378
	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
REAL SAMPLE		474	38	60	114	42	38	26	32	29	59	36	105	134	235	202	269	0	474
STATION SUES.NOZZLE	%H	100	0	0	63	0	37	0	0	0	0	0	37	0	63	69	31	0	100
	%V	4	0	0	54	0	5	0	0	0	0	0	2	0	26	9	2	0	4
FILLED TANK SLOWLY	%H	100	0	0	0	44	0	0	55	0	1	0	0	99	1	20	80	0	100
	%V	3	0	0	0	19	0	0	25	0	2	0	0	13	0	2	4	0	3
USED A FUNNEL OR ADAPT.	%H	100	0	0	0	0	0	100	0	0	0	0	0	0	100	0	100	0	100
	%V	0	0	0	0	0	0	12	0	0	0	0	0	0	1	0	0	0	0
MODIFIED RECEPTACLE	%H	100	14	11	3	6	31	1	5	25	2	3	70	22	9	35	63	0	100
	%V	91	97	100	46	81	92	88	75	100	98	97	96	87	72	89	93	0	91
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		SIZE CLASS: SMAL	SUB-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	MANUFACTURER: GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	ORIGIN: DOM.	INF.	FUEL USED: GS LEAD	UNLE	MIS-FUEL YES	L-U
U.*																							
WEIGHTED SAMPLE		118	84	34	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378	
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100	
REAL SAMPLE		127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474	
STATION SUES.NOZZLE	%H	7	4	3	67	38	30	23	84	14	2	0	0	0	0	0	0	99	0	100	0	100	
	%V	1	1	2	8	7	8	4	6	2	2	0	0	0	0	0	0	5	0	4	0	4	
FILLED TANK SLOWLY	%H	31	25	7	26	19	7	43	33	49	12	0	0	0	0	0	0	94	0	100	0	100	
	%V	3	3	2	2	2	1	5	2	5	9	0	0	0	0	0	0	3	0	3	0	3	
USED A FUNNEL OR ADAPT.	%H	0	0	0	67	33	33	33	100	0	0	0	0	0	0	0	0	100	0	100	0	100	
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MODIFIED RECEPTACLE	%H	32	23	9	38	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100	
	%V	92	92	92	90	90	90	91	92	92	86	100	100	100	100	100	81	92	91	91	0	91	
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

NOT ASKED DEC.1985 "OPTIMA VEHICLES"
IF WOULD LIKE TO ASK YOU WHY YOU'RE LEANED TOWARDS GASOLINE IN YOUR VEHICLE, RATHER THAN UNLEADED

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA. FUEL	
			VANC	CALG	REGI	WINN	TORO	SUBE	OTTA	MTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	LEAD	UNLE
WEIGHTED SAMPLE		1144	202	104	35	125	338	18	69	205	16	32	745	298	100	420	709	754	328
	%H	100	18	9	3	11	30	2	6	18	1	3	65	26	9	37	62	66	33
REAL SAMPLE		1371	155	171	204	208	110	120	94	70	129	110	335	473	563	529	837	867	474
CHEAPER IN PRICE	%H	100	12	14	3	7	16	2	8	32	2	5	60	28	11	31	65	51	47
	%V	22	15	33	24	15	12	27	29	40	27	36	21	24	29	19	23	17	32
CAR IS DESIGNED FOR IT	%H	100	19	7	3	12	34	2	6	15	1	2	67	25	8	37	62	71	28
	%V	69	72	50	64	77	79	69	69	56	69	55	71	66	62	70	69	74	58
BETTER MILEAGE	%H	100	15	6	5	12	60	1	0	0	0	3	73	18	9	85	15	8	92
	%V	1	1	1	1	1	2	1	0	0	0	1	1	1	1	2	0	0	2
BETTER PERFORMANCE	%H	100	0	2	1	12	47	0	4	15	1	10	63	26	12	50	50	86	14
	%V	2	0	2	0	2	3	0	1	1	1	6	2	2	2	2	1	2	1
OTHER	%H	100	39	22	5	10	11	1	1	10	0	1	61	33	7	39	61	77	23
	%V	5	11	12	8	4	2	2	1	3	0	2	5	6	4	5	5	6	3
CHEAPER $ + MILEAGE	%H	100	0	41	11	20	0	10	0	0	8	10	0	61	39	15	85	55	45
	%V	0	0	1	1	0	0	2	0	0	2	1	0	1	1	0	0	0	0
CHEAPER $ + PERFORMANCE	%H	100	0	26	0	6	65	0	0	0	3	0	65	32	3	67	33	27	73
	%V	1	0	2	0	0	2	0	0	0	2	0	1	1	0	1	0	0	2
NO ANSWER	%H	100	0	0	100	0	0	0	0	0	0	0	0	0	100	100	0	100	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[illegible] 85 445 DEC.1985 "OPTIMA-VEHICLES"
I would like to ask you what you use leaded gasoline in your vehicle, rather than unleaded

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		HIS FUEL YLS L-U
		SMAL	SUB COMP	COMP	LARG	MID SIZE	FULL SIZE	IRDC VAN	GM	FORD	CHRY	AMC	DAIS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	US LEAD	UNLE	
9.10																						
WEIGHTED SAMPLE		596	384	210	308	210	97	156	310	181	259	16	38	30	131	60	116	771	370	1144	0	326
	%H	52	34	18	27	18	9	14	27	16	23	1	3	3	11	5	10	67	32	100	0	33
REAL SAMPLE		626	384	240	425	261	142	227	404	259	334	25	49	38	115	53	111	1007	358	1371	0	474
UNEARTH IN PRICE	%H	41	24	17	41	29	13	13	41	17	21	3	5	2	6	2	5	82	18	100	0	47
	%V	17	16	20	34	35	33	21	34	24	21	44	35	14	12	8	7	27	12	22	0	32
CAR IS DESIGNED FOR U	%H	54	37	17	23	15	8	15	23	15	23	1	3	3	15	6	11	63	37	100	0	28
	%V	71	75	64	56	56	63	76	56	67	70	33	59	78	87	78	77	64	79	69	0	58
BETTER MILLAGE	%H	49	30	19	47	45	2	3	41	13	33	0	0	13	0	0	0	87	13	100	0	92
	%V	1	1	1	2	2	0	0	1	1	1	0	0	4	0	0	0	1	0	1	0	2
BETTER PERFORMANCE	%H	89	56	53	9	9	0	1	16	17	38	0	1	1	6	1	16	71	26	100	0	14
	%V	3	2	5	1	1	0	0	1	2	3	0	1	1	1	0	3	2	1	2	0	1
OTHER	%H	57	30	22	27	22	6	6	22	15	23	2	3	1	10	15	16	66	34	100	0	23
	%V	5	4	7	5	6	3	2	4	5	5	23	4	2	0	14	8	5	5	5	0	3
UNEARTH $ + MILLAGE	%H	50	24	26	19	14	6	30	15	45	10	0	20	5	0	0	4	71	29	100	0	45
	%V	0	0	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	0
UNEARTH $ + PERFORMANCE	%H	75	39	34	21	13	8	6	53	6	1	0	0	0	0	0	39	61	39	100	0	73
	%V	1	1	2	1	1	1	0	2	0	0	0	0	0	0	0	3	1	1	1	0	2
NO ANSWER	%H	0	0	0	100	100	0	0	0	0	100	0	0	0	0	0	0	100	0	100	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INDI 85-443 DEC.1985 "OPTIMA VEHICLES"
I WOULD LIKE TO ASK YOU WHY YOU USE LEADED GASOLINE IN YOUR VEHICLE, RATHER THAN UNLEADED

FILTER:NEWSPAPERS ONLY Reasons

		TOTAL	CITY										COMMUNITY SIZE			STAT.TYPE		DESIGNA.	
			VANC	CALG	REGI	WINN	TORO	SUDB	OTTA	HTL	T-R.	HALI	1000 K+	500-800K	100-400K	FULL SERV	SELF BOTH	FULL LEAD	UNLE
U.TO																			
WEIGHTED SAMPLE		378	50	37	19	25	117	4	24	85	7	10	251	85	41	134	234	0	378
	%H	100	13	10	5	7	31	1	6	22	2	3	67	23	11	36	62	0	100
REAL SAMPLE		474	38	60	114	42	38	26	32	29	59	36	105	134	235	202	269	0	474
CHEAPER IN PRICE	%H	100	10	12	5	8	13	1	7	36	2	5	59	28	13	36	59	0	100
	%V	32	24	40	32	40	13	38	37	52	34	56	28	39	39	32	31	0	32
CAR IS DESIGNED FOR IT	%H	100	14	7	5	6	39	1	6	19	2	2	72	18	9	32	67	0	100
	%V	58	63	40	53	50	74	58	56	48	59	33	63	47	49	51	63	0	58
BETTER MILEAGE	%H	100	14	6	2	13	65	0	0	0	0	0	79	19	2	85	15	0	100
	%V	2	3	2	1	5	5	0	0	0	0	0	3	2	0	6	1	0	2
BETTER PERFORMANCE	%H	100	0	23	0	23	0	0	28	0	5	22	0	73	27	50	50	0	100
	%V	1	0	2	0	2	0	0	3	0	2	6	0	2	2	1	1	0	1
OTHER	%H	100	30	42	20	0	0	0	6	0	0	2	30	48	22	39	61	0	100
	%V	3	8	15	13	0	0	0	3	0	0	3	2	7	7	4	3	0	3
CHEAPER $ + MILEAGE	%H	100	0	0	26	45	0	11	0	0	18	0	0	45	55	13	87	0	100
	%V	0	0	0	2	2	0	4	0	0	3	0	0	1	2	0	0	0	0
CHEAPER $ + PERFORMANCE	%H	100	0	9	0	0	89	0	0	0	2	0	89	9	2	89	11	0	100
	%V	2	0	2	0	0	5	0	0	0	2	0	2	1	0	5	0	0	2
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

INCT 85-413 DEC 1985 "OPTIMA-VEHICLES"
I WOULD LIKE TO ASK YOU WHY YOU USE LEADED GASOLINE IN YOUR VEHICLE, RATHER THAN UNLEADED

FILTER:MISFUELERS ONLY

		SIZE CLASS							MANUFACTURER									ORIGIN		FUEL USED		MIS-FUEL YES L-U
		SMAL	SME-COMP	COMP	LARG	MID-SIZE	FULL SIZE	TRUC VAN	GM	FORD	CHRY	AMC	DATS	TOYO	HOND	VOLK	OTH.	DOM.	IMP.	93 LEAD	UNLE	
U.IU																						
WEIGHTED SAMPLE		118	84	34	147	86	61	95	222	106	14	1	3	11	0	3	16	344	33	378	0	378
	%H	31	22	9	39	23	16	25	59	28	4	0	1	3	0	1	4	91	9	100	0	100
REAL SAMPLE		127	80	47	196	117	79	129	292	121	25	1	9	12	1	1	11	438	34	474	0	474
CHEAPER IN PRICE	%H	22	11	11	52	31	21	23	67	26	3	1	1	2	0	0	0	96	4	100	0	100
	%V	23	16	38	43	43	42	29	36	30	28	100	46	25	0	0	0	34	15	32	0	32
CAR IS DESIGNED FOR IT	%H	32	27	6	32	17	15	30	56	31	3	0	1	3	0	1	4	90	10	100	0	100
	%V	60	69	36	47	44	52	69	56	64	48	0	54	61	100	100	60	58	65	58	0	58
BETTER MILEAGE	%H	53	33	20	42	42	0	0	41	13	33	0	0	14	0	0	0	86	14	100	0	100
	%V	4	4	6	3	5	0	0	2	1	22	0	0	12	0	0	0	2	4	2	0	2
BETTER PERFORMANCE	%H	55	55	0	45	45	0	0	73	5	0	0	0	0	0	0	0	77	0	100	0	100
	%V	1	2	0	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	1
OTHER	%H	21	10	11	62	42	20	16	66	32	1	0	0	0	0	0	1	99	1	100	0	100
	%V	2	2	4	5	6	4	2	4	4	1	0	0	0	0	0	1	4	1	3	0	3
CHEAPER $ + MILEAGE	%H	67	9	58	22	9	13	11	35	45	0	0	0	11	0	0	9	80	20	100	0	100
	%V	1	0	2	0	0	0	0	0	1	0	0	0	1	0	0	1	0	1	0	0	0
CHEAPER $ + PERFORMANCE	%H	89	45	45	11	0	11	0	55	0	0	0	0	0	0	0	45	55	45	100	0	100
	%V	5	4	9	0	0	1	0	2	0	0	0	0	0	0	0	19	1	9	2	0	2
NO ANSWER	%H	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	%V	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0